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# ADDRESSES AND ORIGINAL ARTICLES

## THE DARK-ADAPTATION TEST: ITS RELIABILITY AS A TEST FOR VITAMIN-A DEFICIENCY

BY LESLIE J. HARRIS, Sc.D., D.Sc., Ph.D., F.I.C.
AND
M. A. ABBASY, Ph.D., M.B.
NOW LECTURER IN NUTRITION, DEPARTMENT OF HYGIENE AND PREVENTIVE MEDICINE, UNIVERSITY OF CAIRO
(*From the Nutritional Laboratory, University of Cambridge and Medical Research Council*)

THE work described in this paper was carried out in November–December, 1937, and a summary of it was communicated to the Biochemical Society in 1938 (Abbasy and Harris 1938; see also Ahmad and Harris 1938). In view of current interest in the problem it seems worth while to give a more detailed account of our experimental data. It may be of particular interest to do so now, because investigations at the Rowett Institute during the past year (Thomson et al. 1939), in which a different technique was adopted for the test, have led to rather different conclusions (we are indebted to Sir John Orr for kindly keeping us in touch with this work), and it may be that a consideration of the various types of procedures and a general discussion of the whole problem may help towards further refinements in the method of test.

In earlier work (Maitra and Harris 1937) about 200 poor-class children attending elementary schools in the east end of London and in Cambridge were examined by a dark-adaptation test with the Birch-Hirschfeld photometer, and roughly 40–50 per cent. were found to be normal, about 20–30 per cent. "slightly below normal," and the remaining 20–30 per cent. "definitely subnormal." In control tests children with subnormal adaptation improved when given vitamin A but not otherwise. Of 30 better-fed public-school boys examined for comparison at the same time, 27 were normal and only 3 "slightly below normal." This high incidence of subnormality among children attending elementary schools was in accordance with the results of dietary surveys—e.g., that of Orr (1936)—which indicate that a considerable proportion of the poorer classes in this country receive less than their reputed optimal requirement of vitamin A. It corresponded also with our impressions of the dietary history of many of these children.

In this earlier paper some of the possible sources of error in the technique of the dark-adaptation test were discussed, and precautions were described which ought to be adopted before the results could be regarded as reliable. It seemed to us advisable to make a further study of some of these potential errors, particularly since Palmer and Blumberg (1937) and Snelling (1936, 1938) were unable to secure satisfactory results with an alternative method, by the Jeans and Zentmire biophotometer. We believe that our further investigation shows that the dark-adaptation test, although capable of refinement in many details, is sound in principle, provided that certain precautions are taken and adequate control tests are made. A further reason for the present work was a desire to estimate the incidence of deficiency of vitamin A in an unselected group of children attending a single given school. The previous data (Maitra and Harris 1937) were obtained principally from children visiting school clinics, generally for minor ailments or injuries. The incidence of subnormality in comparable groups of children has been found to be of the same order in this new survey as in the earlier work.

Since the preliminary publication of the present work (Abbasy and Harris 1938) more reports have appeared, most of the writers accepting the view that there is a correlation between diminished dark-adaptation and deficiency of vitamin A, and that this may be made the basis of a test (Wald, Jeghers, and Arminio 1938, Booher et al. 1939, Hecht and Mandelbaum 1938, 1939, Haig, Hecht, and Patek 1938, McKenzie 1938, 1939, Booher and Williams 1938, Juhász-Schäffer 1938, Haines 1938, Groth-Petersen 1938, Gantzel 1938, Ditchburn 1939, Pett 1938, Stewart 1939, Kimble and Gordon 1939, Bigwood 1939, Getz et al. 1939, Drigalski et al. 1939, Abramson and Oigaard 1939). Those who criticise the method have, almost without exception, worked with the biophotometer (Palmer and Blumberg 1937, Palmer 1938, Snelling 1938, Isaacs et al. 1938, Schuck and Miller 1938). Palmer (1938) remarked that the principle of a dark-adaptation test seemed sound, but the particular method which he investigated was unsatisfactory.

We assume that a deficiency of vitamin A does, in fact, lead to diminished powers of dark-adaptation. It has now been repeatedly shown that human subjects restricted to a diet low in vitamin A show consistently a drop, gradual or rapid, in their powers of adaptation, and that the symptom can be cured (intermittently, if so desired) as often as vitamin A is restored to the diet (Wald, Jeghers, and Arminio 1938, Booher et al. 1939, Pett 1938, Jeghers 1937, Hecht and Mandelbaum 1938, Friderichsen and Edmund 1937, Edmund and Clemmesen 1936). The observations of Lindqvist (1938) seem equally conclusive; he has shown that, when the concentration of vitamin A in the blood-serum falls below 70 I.U. per 100 c.cm., dysadaptation always develops. Again, in animals—e.g., calves—nyctalopia has been shown to be a specific symptom of lack of vitamin A (Moore 1939). Our surveys have indicated that there is a correlation between dark-adaptation and the past diet, and that in control tests subjects found to be subnormal have become normal after treatment with vitamin A but not otherwise. Our object, then, is to present the evidence indicating that such dark-adaptation tests seem reliable in principle, but at the same time we suggest further study, especially for improving the details of the technique.

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*Principle of method.*—The dark-adaption test is based on the observation that with a defective intake of vitamin A the ability to see a dimly illuminated object in a dark room is diminished, or the rate of recovery of such power, after a period of exposure to bright light, is delayed. The explanation most generally accepted is that the visual purple of the retina is a derivative of vitamin A; hence its rate of regeneration depends on an adequate supply of the vitamin. Probably this explanation is a somewhat over-simplified description of the more elaborate series of reactions involved, but this consideration need not necessarily affect the value of the test. (For literature on vision in relation to vitamin A see Hecht 1937, Wald 1935, Wald and Clark 1937, Krause and Sidwell 1938, Tansley 1939.)

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In earlier work (Maitra and Harris 1937) about 200 poor-class children attending elementary schools in the east end of London and in Cambridge were examined by a dark-adaptation test with the Birch-Hirschfeld photometer, and roughly 40–50 per cent. were found to be normal, about 20–30 per cent. "slightly below normal," and the remaining 20–30 per cent. "definitely subnormal." In control tests children with subnormal adaptation improved when given vitamin A but not otherwise. Of 30 better-fed public-school boys examined for comparison at the same time, 27 were normal and only 3 "slightly below normal." This high incidence of subnormality among children attending elementary schools was in accordance with the results of dietary surveys—e.g., that of Orr (1936)—which indicate that a considerable proportion of the poorer classes in this country receive less than their reputed optimal requirement of vitamin A. It corresponded also with our impressions of the dietary history of many of these children.

In this earlier paper some of the possible sources of error in the technique of the dark-adaptation test were discussed, and precautions were described which ought to be adopted before the results could be regarded as reliable. It seemed to us advisable to make a further study of some of these potential errors, particularly since Palmer and Blumberg (1937) and Snelling (1936, 1938) were unable to secure satisfactory results with an alternative method, by the Jeans and Zentmire biophotometer. We believe that our further investigation shows that the dark-adaptation test, although capable of refinement in many details, is sound in principle, provided that certain precautions are taken and adequate control tests are made. A further reason for the present work was a desire to estimate the incidence of deficiency of vitamin A in an unselected group of children attending a single given school. The previous data (Maitra and Harris 1937) were obtained principally from children visiting school clinics, generally for minor ailments or injuries. The incidence of subnormality in comparable groups of children has been found to be of the same order in this new survey as in the earlier work.

Since the preliminary publication of the present work (Abbasy and Harris 1938) more reports have appeared, most of the writers accepting the view that there is a correlation between diminished dark-adaptation and deficiency of vitamin A, and that this may be made the basis of a test (Wald, Jeghers, and Arminio 1938, Booher et al. 1939, Hecht and Mandelbaum 1938, 1939, Haig, Hecht, and Patek 1938, McKenzie 1938, 1939, Booher and Williams 1938, Juhász-Schäffer 1938, Haines 1938, Groth-Petersen 1938, Gantzel 1938, Ditchburn 1939, Pett 1938, Stewart 1939, Kimble and Gordon 1939, Bigwood 1939, Getz et al. 1939, Drigalski et al. 1939, Abramson and Oigaard 1939). Those who criticise the method have, almost without exception, worked with the biophotometer (Palmer and Blumberg 1937, Palmer 1938, Snelling 1938, Isaacs et al. 1938, Schuck and Miller 1938). Palmer (1938) remarked that the principle of a dark-adaptation test seemed sound, but the particular method which he investigated was unsatisfactory.

We assume that a deficiency of vitamin A does, in fact, lead to diminished powers of dark-adaptation. It has now been repeatedly shown that human subjects restricted to a diet low in vitamin A show consistently a drop, gradual or rapid, in their powers of adaptation, and that the symptom can be cured (intermittently, if so desired) as often as vitamin A is restored to the diet (Wald, Jeghers, and Arminio 1938, Booher et al. 1939, Pett 1938, Jeghers 1937, Hecht and Mandelbaum 1938, Friderichsen and Edmund 1937, Edmund and Clemmesen 1936). The observations of Lindqvist (1938) seem equally conclusive; he has shown that, when the concentration of vitamin A in the blood-serum falls below 70 I.U. per 100 c.cm., dysadaptation always develops. Again, in animals—e.g., calves—nyctalopia has been shown to be a specific symptom of lack of vitamin A (Moore 1939). Our surveys have indicated that there is a correlation between dark-adaptation and the past diet, and that in control tests subjects found to be subnormal have become normal after treatment with vitamin A but not otherwise. Our object, then, is to present the evidence indicating that such dark-adaptation tests seem reliable in principle, but at the same time we suggest further study, especially for improving the details of the technique.

### TECHNIQUE

*Principle of method.*—The dark-adaption test is based on the observation that with a defective intake of vitamin A the ability to see a dimly illuminated object in a dark room is diminished, or the rate of recovery of such power, after a period of exposure to bright light, is delayed. The explanation most generally accepted is that the visual purple of the retina is a derivative of vitamin A; hence its rate of regeneration depends on an adequate supply of the vitamin. Probably this explanation is a somewhat over-simplified description of the more elaborate series of reactions involved, but this consideration need not necessarily affect the value of the test. (For literature on vision in relation to vitamin A see Hecht 1937, Wald 1935, Wald and Clark 1937, Krause and Sidwell 1938, Tansley 1939.)

*Apparatus used.*—The equipment used, both in the preliminary exposure to brilliant illumination and for determining the minimum of visual perception

subsequently, was, except for certain improvements referred to below, similar to that described earlier (Maitra and Harris 1937). The subject gazes for 5 min. at the centre of a large white screen placed 3 ft. in front of him, illuminated by a 150-watt lamp and metal reflector placed immediately over his head. (In contrast with some other procedures and for reasons discussed below, we omit any preliminary dark-adaptation, the child being exposed to the bright screen immediately he leaves the normal lighting of the class room.) After the lapse of the 5 min. the lamp is extinguished, and the threshold value is measured with a Birch-Hirschfeld photometer,* first with as little delay as is consistent with an accurate reading (say, 30–45 sec.) and then after a wait of 10 min. in complete darkness. (In later work we took readings every 3 or 5 min. up to 20 min. and timed the first reading with a stopwatch.) During these readings the Goldberg wedge is kept at position 5, except when, with a "good normal" subject, a diaphragm reading of 2 or under is shown for the 10-min. value, and the wedge can then be pushed up to 6 or beyond. Normal subjects give a curve like N in fig. 1, and subjects with increasing deficiency like D, DD, and DDD.

The principle of the Birch-Hirschfeld photometer is well known. In the dark-adaptation test the subject sees five spots of light arranged as in fig. 2, those to the left being more brightly illuminated than those to the right. The intensity of the illumination of the spots is gradually diminished, until first only three spots can be distinguished, then only two, then none. The reading is taken at the point when the subject can just barely distinguish three out of the five spots previously visible, this reading being checked and rechecked (this additional check is an important safeguard in the procedure) by the fact that, when the operator in turn increases and diminishes the transmitted illumination by one grade in either direction, the subject should state that five spots and two spots respectively are visible.

* The model we used was of the original pattern, supplied by Messrs. Carl Zeiss (London) Ltd. in 1936, and we find it preferable to a more recent type now available.

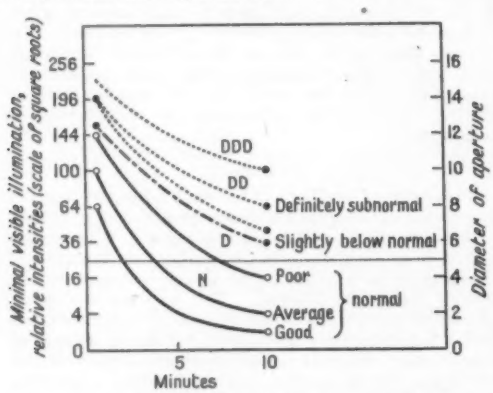



FIG. 1—Schematised diagram, showing dark-adaptation after exposure to bright light, to illustrate the standards accepted for the present work, a 10-min. reading of aperture-value of 6 and over being taken to indicate deficiency. (No representation is made of the point of inflexion marking the transformation from cone vision to rod vision, the position of which on the curve depends on the wave-length of the light. In these experiments the so-called neutral light transmitted by the Goldberg wedge was used.)

*Standards.*—The value to which we attach crucial importance is the second reading, taken after 10 min. in the dark, and not the initial reading taken almost immediately after the exposure to light. The reason for this is that during the initial reading the threshold value is changing so rapidly after the exposure to the

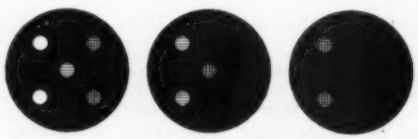


FIG. 2—Quincunx used in Birch-Hirschfeld photometer. The reading is taken when three spots are visible (central illustration), increased illumination causing five spots (left) and diminished illumination two spots (right) to appear.

light that it is difficult to assess it accurately—in fact, the results depend largely on the speed with which the operator works. With the 10 min. reading, on the other hand, the threshold value has become more stabilised and it may be determined deliberately and then rechecked with care. A diaphragm reading of 2 or 4 (the Goldberg wedge being set at 5) for this second reading is accepted as normal, and readings of 6 or more are classed as subnormal. This criterion seems justified by the results described below, where it is shown that values of 2 or 4 (or under) were almost always reached by the deficient subjects after they had been receiving large doses of vitamin A for a sufficient period of time. (By a reading of under 2 is meant that with the diaphragm at 2 the Goldberg wedge may be moved to a still more opaque position—i.e., 6 or 7.) It must be clearly understood that in this procedure we are not concerned with assessing with precision ordinary low readings as given by good normal subjects or in the final thresholds, after more prolonged dark-adaptation. Our object has been rather to detect the abnormally high values, outside the range of normal variations, as given by deficient subjects. Notwithstanding its relative crudeness, the method seems adequate for this particular purpose.

The usual reading for a normal subject is 2 or 4 for the 10-min. reading; combined with 6–10 for the initial reading.

It is true that an abnormally high initial reading often helps to confirm the finding of a high value for the 10-min. reading; and for convenience and to conform with the standards referred to in the earlier paper we have again divided our subnormal readings into two further classes—namely, "slightly below normal" and "definitely subnormal." A final reading of 6 combined with an initial reading of 10 or 12 is called "slightly below normal" or "border line" but with an initial reading of 14 or over is "definitely subnormal." Values of 8 or over for the 10-min. reading are classed as "definitely subnormal" irrespective of the initial reading.† It is not pretended that any absolute significance can be attached to this subdivision of the deficient cases, and it is to be regarded as nothing more than roughly qualitative and not strictly quantitative. A diagnosis of "definitely subnormal" based on a reading of 8 is no doubt secure enough; but the difference between "definitely subnormal" and "slightly below normal," when both are based on a reading of 6, may fall within the experimental error, so that considerable overlapping is possible. With further

† As mentioned in an earlier paper (Maitra and Harris 1937), combinations of normal 10-min. readings with very high initial readings are rare and have not been encountered in this work. They have, however, been observed in some later experiments in which the first reading was made with great rapidity. We think it safer not to regard these values as subnormal.

improvements in technique a more satisfactory set of standards can be worked out. In the meantime it is understood that this rather arbitrary system of subdivision of the subnormal cases is given merely for the sake of comparison with earlier results.

*Special features of technique.*—Although the method of measuring dark-adaptation was in principle the same as that previously described (Maitra and Harris 1937) several refinements were incorporated, of which the three following were perhaps the most important:

(1) To minimise the "learning factor," each subject was made thoroughly familiar with the use of the photometer before the start of the test proper, and no value was accepted until he had recorded the same or a neighbouring reading repeatedly and consistently (see below).

(2) For the light-adaptation a screen covering a large area (about 6 ft. square) was used, and the subject was directed to fix his gaze on a circle lightly marked in the centre of it. The object was to ensure that all parts of the retina were exposed to the bleaching action of the light and to procure an adequate and standardised degree of illumination (see below). Care was taken to see that the subject's eyes were open during the whole period of exposure to light and fixed on the centre of the screen.

(3) To direct the child's attention to the exact position of the faintly illuminated spots of the photometer, his face was placed inside a hood opening into a cylindrical tunnel 9 in. in diameter and 2 ft. long, at the far end of which and immediately facing the child the photometer was fixed.

As before, all tests were carried out in a completely darkened room. The hood placed over the child's head prevents any interference by stray light.

To avoid unintentionally influencing the child, it is important that no leading questions be asked. The child is merely requested to say, after each movement of the lever (or sometimes with no movement), how many spots are visible. The reading is taken as soon as the same reply—namely, "three spots"—is returned at each repetition on the same position, and when, with a diminished and increased illumination respectively, the answers are constantly "two spots" and "five spots" ("one spot" and "four spots" respectively are sometimes answered and accepted).

## POSSIBLE SOURCES OF ERROR

The following are some of the more important of the possible sources of error:

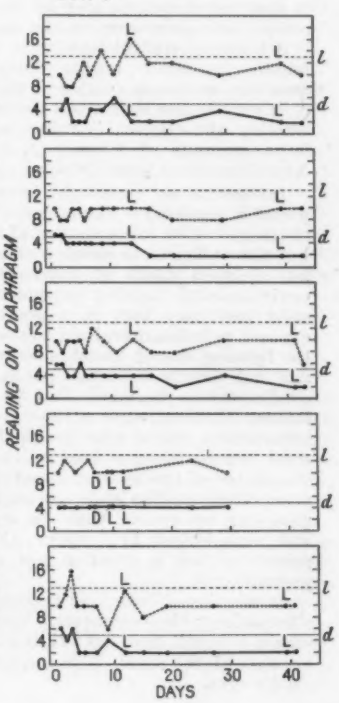
1. Improved performance resulting from increasing familiarity with the instrument ("practice" factor).
2. Minor variations in standards of normality.
3. Inadequate or unsuitable illumination during the period of light-adaptation.
4. Delay in taking the initial readings after light-adaptation.
5. Partial lack of objectivity of the method.
6. Inapplicability of the method to dull, mentally backward, unbalanced, or deaf subjects or to too young children.
7. Inapplicability of the method to subjects with gross or uncorrected errors of vision.
8. Effect of variations in exposure of the subject to light before the start of the test.
9. Inaccuracy or lack of sensitiveness of certain types of photometer.

*Improved performance resulting from increasing familiarity with instrument.*—The obvious method of reducing this source of error to its minimum is to make the child familiar with the instrument in a series of preliminary trials before exposure to the bright screen in the first test, and in no circumstances to record an initial reading until one is satisfied that the child repeatedly and consistently gives an answer of the same order. This is best done after a few minutes in the dark, so that dark-adaptation has become fairly well stabilised. In the earlier work (Maitra and Harris 1937) it was our practice to explain the use of the photometer to the child before the test; but it is evident that it is an advantage to go a step farther than this and to continue such trials until consistent readings are yielded. The fact that on each occasion an increase of one unit in the degree of illumination causes five spots to become visible in place of the original three, and a decrease of one unit reduces the number of spots to two, enables the result to be checked with some accuracy.

*Minor variations in standards of normality.*—There can be no doubt that different normal subjects (or the same subject) may vary appreciably in their rate of dark-adaptation (see table I and fig. 3), and it may be difficult, therefore, to fix absolute standards defining with precision the exact limits of normality. On the other hand, we think that there is no doubt that the standards which we have taken as representing deficiency are sufficiently far removed outside the ordinary normal range of variation to run little risk of including any appreciable number of normal cases.

It must be remembered that the intensity of illumination varies as the squares of the diaphragm openings; hence the diaphragm readings of 8 and 6 and over taken to represent deficiency, as against readings of 4 and 2 and less for normality, mean intensities of 64 and 36 and over for the deficient subject as against 16 or 4 or 1 and under for the normals—e.g., a typical reading for a deficient subject

FIG. 3




Examples of repeated tests on 5 normal adults under ordinary conditions and after an occasional exposure to bright sunlight (L) or to darkness (D). The upper curves denote readings taken immediately after the light; the lower readings after 10-min. dark-adaptation. The 10-min. readings are used to decide whether there is any deficiency in dark-adaptation, readings of 4 or under (line marked *d*) indicating normality. The upper (light-adapted) curve is regarded as less reliable because of its rapid rate of change and the difficulty in timing it. Values for the light-adapted readings are usually not greater than 12 (line marked *l*).

TABLE I—CONTROL TEST ON NORMAL ADULTS

| Date in 1937 | Photometer readings* Subjects— I | II | III | IV | V | VI |
|---|---|---|---|---|---|---|
| Preliminary control period, normal diet— | | | | | | |
| Oct. 12 | 8, 4 | 8, 2 | 8, 6 | 10, 2 | 12, 2 | 8, 2 |
| „ 13 | 6, 2 | 8, 4 | 8, 4 | 8, 4 | 12, 4 | 8, 2 |
| „ 14 | 7, 2 | 8, 2 | 8, 4 | 8, 2 | 12, 2 | — |
| „ 16 | 8, 2 | 6, 2 | 8, 4 | 8, 2 | 10, 4 | — |
| „ 18 | 6, 2 | 6, 2 | 8, 4 | 8, 2 | 12, 2 | — |
| „ 20 | 8, 2 | 8, 2 | 8, 2 | 8, 2 | 12, 4 | — |
| „ 21 | 6, 2 | 8, 2 | 8, 2 | 8, 2 | 10, 2 | — |
| „ 22 | 8, 2 | 8, 2 | 8, 4 | 8, 2 | 10, 2 | — |
| „ 25 | 8, 2 | 8, 2 | 8, 2 | 8, 2 | 10, 2 | — |
| „ 27 | 8, 2 | 8, 2 | 8, 2 | 8, 2 | 10, .2 | — |
| 17,000 I.U. per person now given daily for 3 weeks except to subjects IV and VI. | | | | | | |
| Dec. 18 | 6, 2 | 6, 2 | 8, 2 | 8, 2 | 8, 2 | 8, 2 |

* In each entry the first value is the initial reading (after about 30 sec.), second value after 10-min. dark-adaptation; all taken with Goldberg wedge at 5.

is 8 before treatment as compared with 2 after treatment with vitamin A (relative intensities of 16 to 1).

A still more cogent argument to justify our conclusion, that the standards chosen for deficiency exclude the ordinary run of normal cases, is that the subjects found deficient did, in fact, usually return to within the normal range after treatment with vitamin A but not without such treatment. Probably a juster criticism is that the standards may be unduly lenient, but it seems preferable to err on the side of conservatism.

A series of control tests were done on a group of middle-class adults, among whom we found dysadaptation to be rare as compared with poor-class school-children (see also Maitra and Harris 1937), to ascertain whether the 'normal" values were improved after large amounts of vitamin A had been ingested. Negative results were obtained (table I).

*Inadequate or unsuitable illumination during the period of bleaching.*—The intensity of the lighting and the length of the exposure should be not only constant but also sufficient to counteract, so far as is possible, any delayed effect of previous variations in the environmental lighting depending on whether the child had been kept in a poorly lighted room or exposed to brilliant sunlight before the test. Further, the lighting should bleach a large area of the retina and not merely a central patch. It is with these considerations in mind that we have (1) used the intense illumination of a 150-watt lamp, (2) taken a large screen, placed near the child, (3) instructed the child to keep his eyes fixed on the circle drawn near the centre of the area of illumination, and (4) kept observation on the child throughout the period of bleaching to ensure that his eyes did not stray and were indeed kept open. (We have been surprised to find in practice how necessary this last precaution is.)

As mentioned below, an apparent weakness in the alternative "biophotometer" instrument is that the screen is small and not brilliantly illuminated and, because of the hood, it is impossible to watch the child's eyes.

*Delay in taking initial readings.*—The visual threshold changes very rapidly after the exposure to the bright light, and the value obtained depends entirely on the speed with which the reading is taken. Since our crucial criterion is the second reading, taken after 10-min. dark-adaptation, this difficulty is largely circumvented. In later tests (Ahmad and Harris 1938) we controlled the first reading by timing it with a stopwatch and took additional readings at intervals of 3–5 min. In the tests described in the first part of the experimental work the "initial readings" were taken within approximately 30–45 sec. from the extinction of the light.

*Lack of objectivity.*—One of the principal objections to the dark-adaptation method is that the test is subjective; but this is not so serious as might at first sight appear. As has already been made clear, one has in practice a considerable degree of control on the veracity of the subject. First, in the course of the repeated trials it can be ascertained whether the child is giving consistent answers. Secondly, the accuracy of each single reading is checked by ascertaining whether the child gives the right answer when, unknown to the child, the illumination has been increased or diminished by one stage. This procedure seems to us to have an advantage over that employed in an alternative method, whereby the child is asked to continue gazing into the darkness and to report at the moment when a dimly illuminated sign or letter first becomes visible to him—i.e., the degree of illumination kept constant and time taken as the variable factor—for by this latter procedure the reading is not cross-checked by additional readings just above and just below the threshold value. (This difficulty is overcome by the procedure used by the Rowett workers.) There is also the factor of visual fatigue, with an inevitably greater lag in returning the answer—i.e., it is harder to fix the moment when a dimly illuminated object slowly becoming visible is first seen than the moment when an object already perceived disappears, as it is quickly dimmed to vanishing point.

*Inapplicability of the method to dull, mentally unbalanced, backward, or deaf subjects and too young children.*—In our experience of surveys on groups of school-children the proportion which has had to be ruled out as dull, backward, unbalanced, or deaf has been too small to be of any practical consequence. In two instances the return of inconsistent answers

TABLE II—INFLUENCE OF PREVIOUS LIGHTING ON RESULT OF PHOTOMETER TEST

| Subject | Conditions immediately preceding bleaching | Diaphragm readings for three spots (Goldberg wedge at 5 unless otherwise stated) At 5 min. after bleaching | At 10 min. after bleaching | At 20 min. after bleaching |
|---|---|---|---|---|
| I | 15 min. in intermittent sun | 4 | 2 | <2* |
| | 20 min. in dark room | 2 | <2* | <2* |
| | ( = after preceding test) | | | |
| II | 15 min. in dark room | 2 | <2* | — |
| | 20 min. gazing at bright summer sky | 4 | 2 | — |
| III | Working in laboratory | 6 | 4 | 2 |
| | 1 hour in intermittent sun | 10 | 4 | 2 |
| | 20 min. in dark room | 4 | 4 | 2 |
| | ( = after preceding test) | | | |

* Readings entered as <2 indicate a diaphragm reading of 2, with the wedge moved to 6 instead of kept at 5.

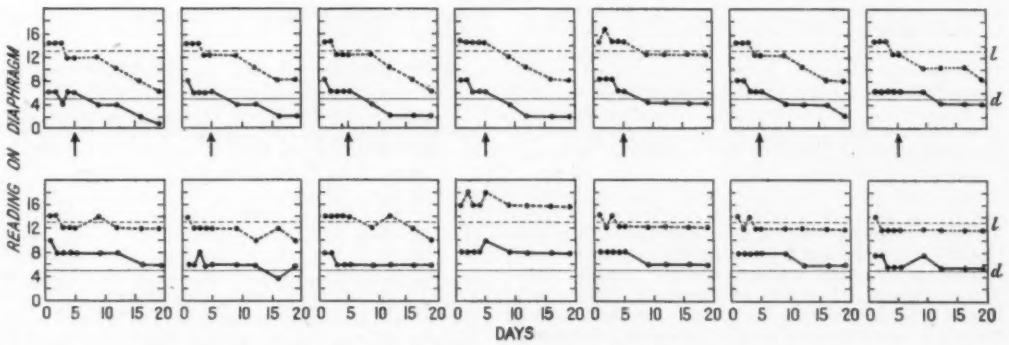



FIG. 4—Repeated photometer tests on 14 subnormal boys. Top row, 7 boys treated with vitamin A 17,000 I.U. daily (arrow indicates start of treatment); bottom row, 7 controls. Upper curves, readings after exposure to light; lower curves, readings after 10-min. dark-adaptation. Lines *l* and *d* as in fig. 3. The first 5 days before treatment were used to assess the "learning factor." Note that all the treated boys return to normal, whereas the untreated boys remain subnormal, although often showing some improvement on increasing familiarity with the test.

by the subject under test has given us the first clue to poor mental calibre, later confirmed by their guardians. As mentioned previously, we do not consider the method suitable with children under the age of about 11. To some extent the unsatisfactory results obtained by Snelling (1936) with the biophotometer may have been due to the use of too young children.

TABLE III—DARK-ADAPTATION TESTS ON BOYS, AGED 11–13, IN A POOR DISTRICT

| | | | |
|---|---|---|---|
| Boys examined | 100 | Found "slightly below normal" | 34 |
| Found normal | 43 | Found "definitely subnormal" | 23 |

*Inapplicability with gross errors of vision.*—Here again, for purposes of surveys, we have experienced no difficulty in ascertaining from the school medical service the results of previous ocular examination and in excluding the small percentage who, because of gross defects, were regarded as unsuitable for test.

*Effect of previous exposure to light.*—Theoretically, the power of perception in the dark or the rate of regeneration of such power may be expected to depend not only on the intensity of the bleaching during the preliminary "light" period but also on prior exposure to sunlight or to artificial illumination. Such an effect has been reported by several workers (Thomson et al. 1939), and we have confirmed its existence (table II); but we have not found that it had any important influence on the tests done with our technique. In other words, its maximal effect in our tests was insufficient to bring a normal subject outside the range of our accepted normal standards. Experiments were done on adults exposed for long periods to bright sunlight, and the data were compared with the results obtained on rising in the morning with the eyes protected by dark goggles or while at work indoors in the laboratory in the usual way (see also fig. 3). The most probable explanation for this relatively negative result is that our standards of deficiency give a sufficiently generous margin to rule out minor influences of this kind. Another reason may be that the intensity of the preliminary exposure and the length of the wait in the dark are sufficient to neutralise largely the effect of previous variations. A possible criticism of these control tests, however, is that they were done mostly on adults, and in our surveys subnormal dark-adaptation values have been found relatively rarely in adults as compared with children. Further observations on this question are urgently needed.

According to the technique introduced by Thomson et al. (1939), all subjects, normal and subnormal, are first given, before "bleaching," a variable period of preliminary dark-adaptation (a longer period for subnormal subjects and a shorter one for normals) until a state of virtually complete dark-adaptation has been attained. We have not adopted this procedure. In fact, an objection to it is that it may tend to equalise the values of deficient and normal subjects. In other words, the longer dark-adaptation given to deficient subjects than to normals allows a greater degree of recovery and resynthesis to the deficient than to the normal subjects; hence differences will be lessened. Here again more work is needed to assess the possible effect of such variations in experimental conditions.

*Inaccuracy or lack of sensitiveness of certain instruments.*—We incline to the view that, so far as the biophotometer of Jeans and Zentmire is concerned, one of the principal drawbacks is probably the inadequate size and the insufficient illumination of the screen used for preliminary "bleaching"; and the hood makes it impossible to observe the child's eyes. Although the object of the hood is said to be to permit observations to be made without a dark room, we have not been able to satisfy ourselves of the reliability of doing so.

The procedure we have employed, although admittedly relatively crude in some respects, seems to exclude several of the more obvious difficulties—e.g., the amount of bleaching appears to be adequate and covers a wide portion of the retina; the subject's attention is directed to the position of the quincunx instead of searching for it in the dark; the readings can be checked by alternative widening and narrowing of the diaphragm; and variations in previous exposure to light do not seem to have an important effect.

At the same time it must be recognised that the measurement of dark-adaptation is in its early stages, and there is still room for refinements in the procedure and the instrument. Among the improvements which we propose are (1) the illumination of the bleaching screen and of the test object to be measured in photometric units in place of the more arbitrary

lighting with standard lamps,‡ and (2) the taking of readings after a series of intervals during adaptation so as to form a time curve. An instrument of the type recently described by Hecht and Shlaer (1938) seems to overcome the defects already discussed and to have other advantages also. Another desideratum, which will be referred to again later, is to control the results where possible by determining the vitamin-A content of the serum.

## RESULTS

In the main experiment to be described, conducted in 1937, 100 boys, aged 11–13, in the upper forms at an elementary school in the poorest area in Cambridge were examined. Previous experiments (Maitra and Harris 1937) have shown that at this age they are old enough to coöperate intelligently, and that a deficiency is more likely to be present—at least as detected by the dark-adaptation test—than at a later age.

The results of the first part of the experiment are summarised in table III, which shows that of the 100 boys 43 were adjudged to be normal, and that by the somewhat arbitrary system of classification mentioned above 34 were "slightly below normal" and 23 "definitely subnormal." These conclusions were then checked by further *control tests* as follows.

Half of the boys found to be "slightly below normal" or "definitely subnormal" were given vitamin A (capsules of halibut-liver oil) 17,000 I.U. daily by mouth. The other half were not treated and served as controls. All of these were examined both at the beginning and at the end of the period of treatment. Further, 14 of the "definitely subnormal" (7 from the treated group and 7 controls) were examined more intensively, being tested on five consecutive days before the beginning of the treatment, to assess still further the "learning factor" and the day-to-day variations, and twice weekly during the period of treatment. Fig. 4 shows the result of the repeated retesting of these 14 "definitely subnormal" boys. During the preliminary period, in which no vitamin A was given, although a slight improvement was generally observed, it was of little significance and never sufficient to alter the classification to one of normal. The boys receiving vitamin A all began to improve considerably, and by the end of the fortnight's treatment all had reached readings within the normal range, most of them being in the zone for "good normals"—i.e., 2 or less for the crucial 10 min. reading, and 6 or 8 for the initial reading. By contrast, the untreated controls, although generally showing a slight improvement, all remained subnormal, with values of 6 or over for the 10-min. reading, and in most instances values of 10 and over for the initial reading.

The slight improvement in the untreated controls in this particular experiment was generally sufficient to change the classification just over the border from "definitely subnormal" to "slightly under normal." This finding confirms the conclusion already given: that the distinction between "definitely subnormal" and "slightly under normal" may often be crude and arbitrary, and of little practical importance.

On the other hand, we feel that the limit set for normality—namely, 10-min. readings of 4 and under as against 6 and over—is real, for the treated controls and the normal adults all fell within this normal range, with one exception only (tables I, IV, and V and fig. 4). Indeed the standard of normality taken is probably lenient, for a large proportion of the treated subjects become "good normals" with readings of 2 or under. In any case, the main conclusion remains unaffected; that in these experiments the low subjects who were treated showed a considerable response, whereas the untreated controls showed relatively little (tables IV and V and fig. 4).

In the same way all the remaining "definitely subnormal" boys treated with vitamin A were

‡ The small bulb-lamp in the photometer was renewed at short intervals in our tests, to rule out so far as possible errors due to slow dimming with age; it was supplied with a constant E.M.F. of 3–5 volts from a 4-volt accumulator fitted with a rheostat and voltmeter. Small fluctuations in the intensity of the lamps used for bleaching and in the photometer are very unlikely to have been sufficient to shift the final classification out of a normal into a subnormal group.

TABLE IV—CONTROL TESTS ON "DEFINITELY SUBNORMAL" BOYS

| Treated with vitamin A | | | Not treated | | |
|---|---|---|---|---|---|
| Case | Reading at start of expt. | Reading after 2 weeks' treatment with 17,000 I.U. of vitamin A daily | Case | Reading at start of expt. | Reading at end of 2 weeks |
| 1 | 14, 6 | 6,<2 | 12 | 14, 8 | 12, 8 |
| 2 | 14, 8 | 8, 2 | 13 | 14, 8 | 12, 6 |
| 3 | 14, 8 | 6, 2 | 14 | 14, 8 | 12, 6 |
| 4 | 14, 8 | 8, 2 | 15 | 16, 8 | 16, 8 |
| 5 | 14, 8 | 8, 2 | 16 | 14, 10 | 12, 6 |
| 6 | 14, 6 | 8, 4 | 17 | 14, 6 | 10, 6 |
| 7 | 14, 6 | 8, 2 | 18 | 14, 8 | 10, 6 |
| 8 | 14, 8 | 8, 4 | 19 | 14, 8 | 12, 6 |
| 9 | 14, 8 | 12, 4 | 20 | 14, 8 | 14, 6 |
| 10 | 16, 8 | 10, 4 | 21 | 14, 6 | 12, 6 |
| 11 | 14, 6 | 10, 4 | 22 | 14, 8 | 14, 8 |

TABLE V—CONTROL TESTS ON BOYS "SLIGHTLY BELOW NORMAL"

| | | | | | |
|---|---|---|---|---|---|
| 23 | 12, 6 | 8, 4 | 40 | 12, 6 | 10, 6 |
| 24 | 10, 6 | 8, 2 | 41 | 12, 6 | 12, 6 |
| 25 | 12, 6 | 10, 6 | 42 | 12, 6 | 14, 6 |
| 26 | 12, 6 | 10, 2 | 43 | 12, 6 | 12, 6 |
| 27 | 12, 6 | 8, 4 | 44 | 12, 6 | 10, 6 |
| 28 | 12, 6 | 8, 2 | 45 | 12, 6 | 12, 4 |
| 29 | 10, 6 | 6,<2 | 46 | 12, 6 | 12, 4 |
| 30 | 12, 6 | 10, 4 | 47 | 12, 6 | 12, 6 |
| 31 | 12, 6 | 8, 2 | 48 | 12, 6 | 12, 6 |
| 32 | 12, 6 | 6,<2 | 49 | 12, 6 | 12, 6 |
| 33 | 12, 6 | 8, 2 | 50 | 12, 6 | 10, 6 |
| 34 | 10, 6 | 6,<2 | 51 | 10, 6 | 12, 4 |
| 35 | 12, 6 | 8, 2 | 52 | 12, 6 | 12, 6 |
| 36 | 10, 6 | 6,<2 | 53 | 12, 6 | 10, 6 |
| 37 | 12, 6 | 8, 2 | 54 | 12, 6 | 12, 4 |
| 38 | 12, 6 | 8, 2 | 55 | 12, 6 | 12, 6 |
| 39 | 12, 6 | 8, 2 | 56 | 12, 6 | 14, 6 |

In each column the first value is the light-adaptation reading, and the second value the reading after 10-min. dark-adaptation. The numerals indicate diaphragm openings with Goldberg wedge set at 5, except that an entry "<2" indicates that the wedge could be moved up to 6.

found to be within the normal range at the end of the fortnight, whereas none of those left untreated became normal, although some had shown a somewhat improved reading—i.e., a rise of one grade (= 2 units)—or just enough to convert a reading of "definitely subnormal" into one of "slightly below normal" (table IV). Likewise all the cases originally "slightly below normal" improved with vitamin A, all but one being classed as normal at the end of the period of treatment, whereas those not treated showed little improvement, 4 out of 18 having improved by one grade from "slightly deficient" to poor normal (table V).

*Control tests ona better fed group.*—Further tests were carried out a few weeks later on 30 boys of similar age at an institution where the diet was adjudged to be exceptionally good—namely, a home for waifs and strays in Cambridge, where the fare included 1½ pints of milk daily and fish-liver oil during the winter. Only the preliminary abstract of this work has so far appeared (Ahmad and Harris 1938), but the results may be conveniently considered here because they form so clear a contrast with the data on the poor-class school-children selected for the main test. The technique was the same as before, except that readings were made at intervals of 5 min. during recovery in the dark, and that the time taken to complete the first reading after turning out the light was measured with a stopwatch. All the boys were examined on at least three successive occasions, and from time to time the 10-min. reading was checked by two independent observers. Of the 30 boys 28 gave "normal" values—namely, 2 or 4 with the Goldberg wedge at 5—for the 10-min. reading on all the three days. (Of these 28 classed as normal several gave values above the usual figure of 12 for the first reading after "bleaching," but this was due to its having been taken very rapidly, generally within less than 30 sec. As explained above, such a combination is counted as "normal," because for the rough purpose of the present paper a subnormal 10-min. reading is taken as the criterion for subnormality.) Of the remaining 2 boys 1 was consistently "definitely subnormal" on all three days—namely, readings of 16, 8; 14, 6; 14, 6 with the wedge at 5—and 1 was "slightly below normal" on all three days—namely, readings of 10, 6; 12, 6; and 8, 6 with the wedge at 5. The 2 boys found subnormal were given vitamin A (halibut-liver oil) 12,000 I.U. daily and retested after three weeks. Both were found to have become normal (readings of 8, 2; and 10, 4). They were still normal after a further three weeks, administration of vitamin A having in the meantime been suspended.

*To be concluded*

MATERNITY AT FORRES HOSPITAL.—Permission has been granted by the Edinburgh Court of Session to the Forres Leanchoil Hospital to admit and treat maternity cases. This hospital was opened in 1892 to "provide medical and surgical aid to persons suffering from disease, or the subjects of accident or injury" within a specified area. The hospital has 32 beds, an operating theatre, X-ray apparatus, and an outpatient clinic. In 1936 it was decided to bring the hospital up to modern standards, and in particular to build a maternity wing. This last proposal had local support, and early in the present year an anonymous donor offered to build and equip the maternity wing. Under the original constitution the trustees were unable to accept maternity cases, and the court's permission to alter it is very welcome.

# RELIEF OF INTRACTABLE PAIN IN CARCINOMA OF THE CERVIX UTERI

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Two years ago I pointed out that two distinct types of pain, visceral and somatic, were experienced in advanced carcinoma of the cervix uteri, and that these types could be differentiated clinically (Todd 1937). This is of importance as regards treatment, because two afferent pathways are concerned, and to be effective therapy must be directed to the particular pathway. I investigated 33 cases: 15 of visceral pain and 18 of somatic. The treatment advocated was presacral neurectomy for visceral pain and intrathecal injections of absolute alcohol for somatic. Relief was obtained in all the visceral cases; in the somatic cases relief was obtained in 14 at the first injection and in 3 at the second. In other words, when the appropriate method was used, the percentage of success was high. In the subsequent two years I have continued this research at the Christie Hospital and Holt Radium Institute, Manchester, and a further series of 55 cases have been investigated, bringing the total to 88. I now present my observations on this second series.

There are no untoward sequelæ of presacral neurectomy, but the question of possible damage to the affected roots or the adjoining spinal cord by intrathecal injections of alcohol is important. Ritchie Russell (1937) pointed out that demyelinisation and posterior-column degeneration developed after injections of alcohol, but that clinical evidence of such changes was as yet absent. Since my previous report Dr. W. Susman has reported on two spinal cords removed at autopsy some months after injections of alcohol; he found small areas of degeneration in the posterior columns of one and scars in several nerve-roots of the cauda equina of the other. In both spinal cords almost all the vessels showed hyaline degeneration. Thus, it is unquestionable that alcohol exerts a deleterious effect on the nerve-roots with which it comes in contact and sometimes also on the posterior columns of the cord. Several other observers have reported similar changes—e.g., Aird and Naffziger (1935), Peyton, Semansky, and Baker (1937), Davis et al. (1931), and Sloane (1935). Hence I consider that these injections should be restricted to malignant cases.

## CLINICAL ASSESSMENT OF THE PAIN

I have continued to investigate the cases along the same lines as described in my previous paper (Todd 1937). A careful history and description of the pain is taken; a neurological examination is made; examination under anæsthesia, cystoscopy, sigmoidoscopy, and exclusion of pyometra are done; and radiography of the lumbosacral spine and pelvis and pyelography complete the investigation. Two or three days suffice for this, and then an assessment is made of the type of pain and of the nerve path concerned.

Objective criteria of the severity of pain are still lacking, but more and more I have come to rely on a period of hospitalisation and preliminary observation. I have continued to regard pain of sufficient severity to prevent sleep unless sedatives are administered as the most reliable indication of intractability, unless the patient is a victim of insomnia from any

other cause. Likewise the relief of pain may be gauged by the patient's ability to do without morphia or other sedatives after treatment and particularly by the occurrence of spontaneous sleep. I know no clinical problem that presents so many difficulties as the assessment of a patient's pain, but, once the patient has been admitted to hospital, an experienced personnel can soon determine whether the pain is severe or not; it is striking how often a patient who has been receiving sedatives, even morphia, will sleep unaided in hospital. A week or even longer may be necessary for deciding whether the pain is minimal and the patient over-reacting to it; but the time is by no means lost, for it allows the patient to realise that the degree of pain has been exaggerated, and that it can become tolerable in the atmosphere and discipline of hospital. I have sent many patients home after full investigation without any treatment, because neither myself nor the nursing staff were convinced that intolerable pain was present. In most of these patients the admission to hospital had a salutary effect, and, without any attempt at serious psychotherapy, reassurance that no disease had been found and the suggestion that the pain would therefore disappear altogether were usually helpful. The craving for sympathy, the subconscious fear of cancer, and the widespread prevalence of addiction to sedatives today all combine to lower the threshold of pain, and I am convinced that it is most important to have a precise objective phenomenon, such as interference with sleep, when attempting to assess and treat patients alleged to have severe pain. I plead for a far more critical attitude here and for the wider use of this criterion in the assessment of pain.

### ÆTIOLOGY

As regards visceral pain, no new ætiological factors have been elicited, the commonest cause of pain being ulceration of the rectum, malignant involvement of the base of the bladder, or pyometra. As before either direct local therapy or presacral neurectomy has almost always given relief.

In my previous paper (Todd 1937) I had pointed out that the ætiology of the cases of somatic pain was uncertain, but that there was a widespread idea that the lower-limb pain of advanced malignancy was invariably due to pressure on or invasion of the nerve trunks as they traversed the pelvis. I stated then that I had seen no cases with evidence of macroscopic invasion of nerve at autopsy, but in this further series such evidence has been forthcoming in 4 cases, and in 3 further cases bone metastases—again a new phenomenon in my experience—have been demonstrated radiographically. The nerve involvement was demonstrated by exploration in 2 cases and seen to be due to invasion of the (obturator) nerve trunk by malignant growth. Therefore the pressure factor so widely assumed to be causal exists at any rate in a proportion of cases. Apart from this, no new light has been thrown on the causation of this type of somatic pain.

### VISCERAL PELVIC PAIN

In the past two years I have investigated and treated 27 further cases of intractable visceral pain. Of these cases 8 were treated experimentally with intrathecal injections of alcohol, because the pain was associated with advancing malignancy. The results of this development in technique have been gratifying. Initial relief was obtained in all 8 cases and persisted in 5 of them until death, which occurred a week, a month, three months (2 cases), and five months later. In the 6th case the pain recurred in a few weeks, but further injection was impracticable; in the last 2 cases initial relief has been obtained, but both have been done within the last two months. The alcohol is injected with the patient so positioned that the first and second lumbar roots of both sides are simultaneously affected.

There were 2 cases where relief followed drainage of pyometra. There was 1 case of severe bladder pain due to advancing malignancy through the base of the bladder and 1 due to massive recurrence of rectal malignancy with involvement of the bladder. Relief followed presacral neurectomy in both, but intrathecal alcohol also was needed in the latter case, because there was considerable somatic pain in the distribution of both sciatic nerves. Presacral neurectomy relieved 1 further case with severe bladder and rectal pain due to recurrent malignancy. The remaining 14 cases were all associated with rectal ulceration following radiation—the natural history and complications of this condition have been described by me (Todd 1938). In 13 of these cases local measures, which were successful in relieving pain in several less severe cases, were ineffectual, and presacral neurectomy was carried out—5 of the patients were operated on by Mr. H. T. Simmonds, Mr. R. L. Holt, or Dr. W. R. Addis, and the remaining 8 by me. The 14th case is still having rectal wash-outs, which give adequate relief. In the 13 cases pain was completely relieved in 12, whereas the remaining 1 was a failure. Since this is the only case of this nature in which pain has not been relieved after presacral neurectomy, and in view of its unique sequel, it is worth recording in detail.

The patient, aged 63, with a stage 3 carcinoma of the cervix, was treated with radium. Six months later necrosis of the rectum developed. She was given a month's trial of local measures, but the necrosis caused such pain that sympathectomy was indicated. This was done, and during convalescence there was some relief of pain, but within two weeks of her discharge from hospital the pain recurred as severely as before. She was readmitted; and, in view of the initial failure and the possibility that an incomplete section had been done on the first occasion, it was considered advisable to do a further laparotomy.

At operation a pulsatile tumour some 5 cm. in diameter was found lying on the aorta immediately above the bifurcation. The triangle between the common iliac arteries was completely cleared, and a left iliac colostomy was made. The patient died three days later from cardiac failure.

At autopsy the pulsatile mass was found to be an aneurysm. Extensive atheromatous changes were present in the aorta, and the previous operation had possibly traumatised the wall. This aneurysm was sufficient to cause her apparent recurrence of rectal pain, in view of the fact that the whole of the visceral sympathetic afferents would have to course over it. I have heard of no comparable case.

My further experiences, therefore, confirm my opinion that for visceral pelvic pain presacral neurectomy is excellent. The first failure in my series developed a complication that could presumably stimulate the central ends of the divided plexus, and even here there was a temporary relief of pain before the development of the aneurysm. In cases associated with advancing malignancy an alternative therapy to presacral neurectomy consists in injections of alcohol so administered as to affect the upper lumbar roots, and I think this will replace neurectomy in the malignant cases.

### SOMATIC LIMB PAIN

Intrathecal injections of alcohol have been given to 28 further cases of somatic limb pain (table I). There were 3 complete failures.

In the first case I could only find the dural space with great difficulty, it was almost a dry tap, and the injection gave no relief—possibly because there was an error in technique, or more probably because pain was associated with spinal compression due to metastases.

In the second case there was a similar failure in the presence of collapse of the body of the fourth lumbar vertebra and spinal compression. This patient died within a month of my attempting treatment, but the first case was in fairly good general health, and my colleague Mr. G. F. Rowbottom successfully carried out a chordotomy, with relief of her pain.

The third failure was in a patient with carcinoma of the prostate with metastases in the ilium whom I injected by invitation of Mr. Geoffrey Jefferson. Severe localised pain over the bone metastases in the distribution of the posterior divisions of first and second sacral nerves was the main symptom, but the patient had had a chordotomy done some months previously and the beneficent result of this had worn off; when I first saw him he was having repeated large doses of morphia. On two occasions at a month's interval I injected alcohol intrathecally, and on each occasion the usual subjective phenomena occurred with relief of pain that lasted only two or three days, after which the craving for morphia reasserted itself and violent pain was complained of. We felt that this pain was now psychogenic, seeing that the whole of the pain afferent pathway had been interrupted on three separate occasions. The fact that relief was always obtained initially and was subsequently followed by a recrudescence suggests that the drug-addiction was responsible for the failure.

One other case was a partial success only; she had severe pain in the right groin, made worse by micturition. There was a right-sided hydronephrosis. An injection of 0·6 c.cm. of absolute alcohol between the twelfth dorsal and the first lumbar vertebræ relieved the dysuria but not the groin pain. The patient's general condition was so poor, and she was such an appalling witness, that I did not repeat the injection.

TABLE I—ROOT VALUE OF SOMATIC LIMB PAIN

| Root value | Cases | Root value | Cases | Root value | Cases |
|---|---|---|---|---|---|
| L.1, 2 | 5 | L.2, S.2 | 1 | L.5 | 1 |
| L.1, 2, 3 | 2 | L.3, 4 | 3 | S.1, 2, 3 | 5 |
| L.2, 3, 4 | 4 | L.4, S.1 | 2 | S.4 | 3 |
| L.4, 5 | 1 | L.4, S.3 | 1 | | |

An analysis of the remaining 24 cases is given in table II.

In this series the only complications were transient retention of urine in 4 cases and fæcal incontinence in 3. Doubtless urinary complications would have arisen in the case of prostatic metastases recorded above, had there not already been an indwelling catheter. Backache localised to the site of the injection has been complained of by several patients, but it has not persisted more than twenty-four to forty-eight hours. In 2 cases there was severe temporary headache. Autopsy has been unobtainable for various reasons; for the most part the patients do not die in hospital, for it is possible to discharge them after the therapy. One partial autopsy was obtained, a laminectomy being allowed for the purpose of removing the spinal cord for histological examination.

Further experience with intrathecal injection of absolute alcohol thus confirms that it is a valuable agent for the relief of intractable pain. Out of 36 cases 31 were given almost complete relief by alcohol, and the average duration of relief was three months,

TABLE II—RESULTS OF INTRATHECAL INJECTIONS OF ALCOHOL IN SOMATIC LIMB PAIN

| Case | Result | Remarks |
|---|---|---|
| 1 | Relieved | Injected only two months |
| 2 | ,, | Died in two weeks, but complete relief of pain until death |
| 3 | ,, | Relief of pain persisted three months |
| 4 | ,, | Died in two months |
| 5 | ,, | Pain recurred in six months, but not severe enough to warrant further injection |
| 6 | ,, | Died in six months. Was under hospital observation practically the whole time and had no recurrence of pain |
| 7 | ,, | Died in three months |
| 8 | ,, | Still free from pain fifteen months after injection |
| 9 | ,, | Died in two weeks |
| 10 | ,, | Died in two months |
| 11 | ,, | Died in 2½ months |
| 12 | ,, | Died in two weeks |
| 13 | ,, | Died in three months |
| 14 | Partial relief | Presacral neurectomy required also for bladder pain. Patient very poor witness and hysterical. Discharged herself within a month of treatment and has not been traced |
| 15 | Relieved | Relief has persisted three months |
| 16 | ,, | Died in four months |
| 17 | Partial relief | Not traced, but pain had recurred in one month |
| 18 | Relieved | Pain recurred in two months. Patient died two months later. Further injection impracticable, for patient was not readmitted to hospital |
| 19 | ,, | Relief lasted six weeks only. Patient died in four months. Further injection impracticable |
| 20 | ,, | Hysterical factor present associated with morphinism |
| 21* | ,, | Recurrence of pain relieved two weeks later by repeat injection |
| 22* | ,, | Retention requiring catheterisation for over ten days complicated relief |
| 23* | ,, | Retention for six days |
| 24* | ,, | Partial relief at first injection. Repeated in one month successfully |

* Cases injected within the last two months.

despite the fact that more than half the patients died within two months of treatment. Two patients are still alive, having been treated over two years ago, and the relief has persisted, though in one the pain is beginning to recur.

## AVOIDANCE OF COMPLICATIONS AND ANALYSIS OF FAILURES

Stern (1937) points out various technical details that help to avoid rectal and bladder complications. He also emphasises the fact that pains arising from bone lesions are more difficult to relieve, and he states that drug-addicts may continue to complain of pain despite injections of alcohol. My experience confirms his. One patient, who had been receiving morphia three or four times daily for several weeks, stoutly denied that there was any relief from the intrathecal injection, and her outward manifestations of the pain were extremely dramatic. However, the substitution of sterile water for morphia was effective in inducing sound sleep on several occasions. This effect of morphinism on the psyche is well known and is probably responsible for these failures.

The best description of technique and dosage is that of Russell (1936). In my experience bladder and rectal complications have been infrequent and transient. I think the most important technical points apart from correct positioning are to inject the alcohol very slowly (taking at least two minutes per 0·5 c.cm.) and not to inject more than 1 c.cm. on any one occasion.

Both Stern (1937) and Saltzstein (1938) labour the point that an injection of more than 0·5 c.cm. of alcohol in the upper lumbar region is liable to be followed by distressing bladder, rectum and lower-limb paralysis. I have often injected 0·8–1 c.cm. of alcohol at this level without complications. The

only point I particularly observe is the slowness of injection. I think barbotage should not be practised, and I do not remove any cerebrospinal fluid before the injection. Adson (1937) advocates the initial withdrawal of 3 c.cm. of cerebrospinal fluid, so that the alcohol may flow across the "water" level to reach the dorsal roots, and Russell (1936) also first withdraws a few c.cm. of cerebrospinal fluid.

Failure occurred in one case from an inability to effect a satisfactory tap—this should be very unusual. It is important, though, always to ensure that there is a free flow of fluid before injecting the alcohol. The failure in the case with cord compression is understandable; only a chordotomy is likely to be of avail in such a case.

In conclusion, it may be stated that relief of intractable pelvic and lower-limb pain associated with advanced malignancy should be achieved satisfactorily in nearly 90 per cent. of cases, and by the adoption of an exact and careful technique undesirable complications should be reduced to a minimum. Failure to achieve relief probably indicates a technical imperfection or the presence of cord compression, or is due to drug-addiction—the relief being obtained through anatomical interruption of the pain pathways but not being appreciated by the sensorium in its abnormal psychological state.


### SUMMARY

An investigation has been made of 51 further cases of intractable pain associated with advanced carcinoma of the cervix, 3 cases of rectal carcinoma, and 1 of prostatic carcinoma. These, added to the former series (Todd 1937) of 33, bring the total to 88. The criteria of intractability and of relief are stated.

The cases have been subdivided again into two distinct types: visceral pain (42) and somatic pain (46).

Treatment along lines previously advocated has been carried out—namely, presacral neurectomy for visceral pain and intrathecal injections of absolute alcohol for somatic pain. Injections of alcohol have also been used in 8 cases of visceral pain complicating advanced malignancy. The results were highly satisfactory in each group; there was 1 complete failure to give relief among the visceral cases and 3 among the somatic cases.

Changes in the nerve-roots and spinal cords found at autopsy in 2 cases are recorded, and it is emphasised that injections of alcohol should be given only in the presence of malignant disease.


This work has been carried out in connexion with a research fellowship at the Christie Hospital and Holt Radium Institute, Manchester. My thanks are due to Dr. Ralston Paterson and to the members of the surgical staff of the hospital, who have collaborated in the treatment of some of the cases, and to the research subcommittee.

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## STRANGULATED HERNIA


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Strangulated hernia is the most important of all the types of hernia. Although its diagnosis should not prove difficult in most cases, delay in diagnosis and consequently in treatment has caused a case-mortality of 20 per cent. in external and 37 per cent. in internal strangulated hernia.

### PATHOLOGY

Strangulation is a condition of vascular engorgement brought about by venous occlusion in the mesentery of the bowel, or occasionally, as in Richter's hernia, in the bowel wall. Coincident with this there is a violent sympathetic stimulation. In a small minority there is simultaneous arterial and venous occlusion. Owing to the vascular engorgement the bowel first becomes red, and then by stages the colour deepens to dark purple. Finally the loop becomes black and gangrenous, and perforation takes place. At the same time an exudation of fluid from the loop collects in the hernial sac or (in internal hernia) in the peritoneal cavity. This fluid is at first clear and straw-coloured, then bloodstained, and finally turbid and odorous. It contains a depressor substance of the histamine type, which has been shown by Knight and Slome to be produced in the muscle of the bowel wall owing to anoxæmia. This depressor substance enters the circulation through the lymphatics of the peritoneum or of the hernial sac. Naturally the amount produced is proportionate to the size of the affected loop, and greater absorption will take place from the peritoneum than from the hernial sac.

At the point of strangulation there is simultaneous arterial and venous occlusion in the constriction groove. This has two important practical applications: (1) perforation may take place here, after the strangulation has been released, because of necrosis of the tissues; and (2) perforation may take place immediately proximal to the constriction because of the pull of the distended proximal portion of the intestine.

Apart from the local conditions, two processes are simultaneously taking place which affect the entire body: (1) changes due to simple obstruction, and (2) changes due to the absorption of the highly toxic depressor substance. Fig. 1 illustrates how fluid and salt are lost into the dilated proximal bowel and by vomiting. The resulting loss of intercellular fluid leads to concentration of the blood, and the loss of salts disturbs the H-ion balance, producing alkalæmia; there is also a rise of non-protein nitrogen and blood-urea and a diminished excretion of urine. Fig. 2 shows the route of absorption of the depressor substance, its toxic effects on the liver, kidneys, and body generally, and the fall in blood-pressure, with a consequent rise in the pulse-rate and a fall in its volume. It also illustrates how, when the strangulation has been released, there will be much absorption of the depressor substance by the venous route. This not infrequently produces a failure of the circulation some hours after an apparently successful operation.

### SYMPTOMS

There are six cardinal signs and symptoms, and these may be divided into two groups, major and minor. The major are pain, vomiting, and inability

to pass flatus. The minor are distension, visible peristalsis, and a palpable swelling. The common sequence of events is as follows. The patient may be a child or an adolescent in whom the appearance of the hernia and its strangulation are nearly coincident, or an adult with a long-standing hernia which has become larger as a result of a sudden effort or strain. In both cases there is a sudden onset of pain, referred usually to the umbilical region and sometimes to the hernia, and this is associated with shock. There is severe nausea or vomiting. Shortly afterwards there are colicky pains, beginning in paroxysms but with shorter and shorter intervals until only exacerbations of a continuous pain can be distinguished.

Vomiting is at first reflex and then mechanical, and the higher the level of the strangulation the earlier the vomiting. Persistent vomiting is perhaps the most important characteristic of acute intestinal obstruction. The vomit is at first the stomach contents, then bile, and finally intestinal fluid. True fæcal vomiting only occurs with gastrocolic fistulæ, and it cannot be too strongly emphasised that to wait for the appearances of intestinal vomiting is to wait too long.

The inability to pass flatus may be not absolute at first; an enema will produce a coloured result and a little flatus from below the site of obstruction, but this does not give any relief. A second enema an hour later has practically always a negative result so far as flatus is concerned.

Distension, although it must be present in every case, is not always visible, for the state of muscular tone of the abdominal wall has an important bearing on the apparent degree of distension. With a lax abdominal wall, since most cases of strangulated hernia involve the small intestine, the distension would tend to be central. The degree of distension also varies inversely with the amount of vomiting; in high obstruction vomiting is severe with little distension, whereas in low obstruction the reverse is the case. There is no doubt that steadily progressive abdominal distension is an important sign in acute obstruction when it is present, and that it always calls

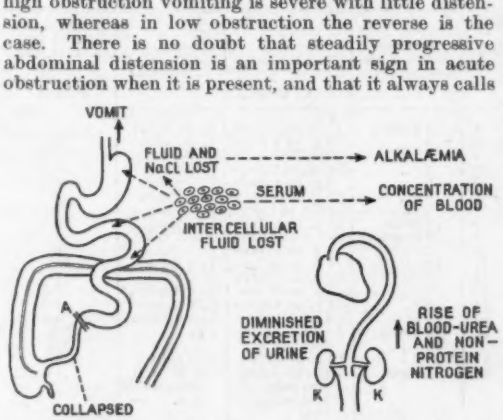


FIG. 1—Results of strangulation: loss of fluid and salt leads to concentration of blood and alkalæmia respectively. Blood-urea and non-protein nitrogen are increased, and the excretion of urine is diminished.

for surgical intervention. However, to wait until it has appeared makes the operation more difficult and runs the almost certain risk that the strangulated loop is no longer viable.

Visible peristalsis is practically never seen in cases of strangulated hernia, unless the abdominal wall is exceedingly thin. It should neither be expected nor waited for.

Palpable swelling can nearly always be found in external strangulated hernia. The danger lies in

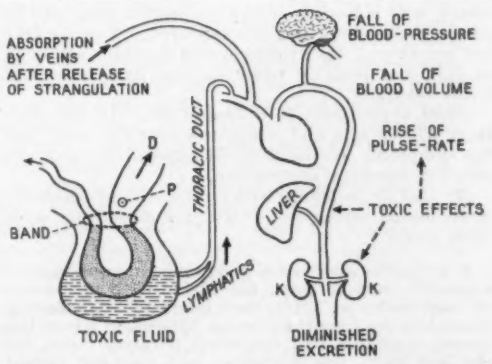


FIG. 2—Route of absorption of depressor substance and its toxic effects on organs, with a consequent fall in blood-pressure and rise in pulse-rate.

a Richter's hernia (partial enterocele) strangulated in the femoral canal. The lump may then be so small that it may not be detected. Examination of this region should always be conducted with the hip flexed and abducted, when any small swelling can be more readily palpated.

## DIAGNOSIS

If the diagnosis could be made as easily as has been indicated, there would be little reason for a case-mortality of 20–37 per cent., even allowing for the highly toxic character of the bowel exudate. The most important features are the three major symptoms of pain, vomiting, and inability to pass flatus, in conjunction with the absence of abdominal tenderness or of rigidity or of both. Their absence is a most important point in differential diagnosis, for in other acute abdominal emergencies both of them are present.

There are, however, four problems that must be considered in the differential diagnosis.

(1) Are the symptoms, which we assume to be those of acute intestinal obstruction, caused by the hernia? In other words, is the hernia strangulated or merely irreducible? An irreducible hernia does not cause any abdominal pain other than a dragging sensation. It is soft and not painful on pressure, whereas the strangulated hernia is tense and tender. If the hernia is associated with acute intestinal obstruction from some other cause, it will have an impulse on coughing and probably be partially reducible.

(2) Is the case really one of hernia? The methods of diagnosis of a hernia have already been discussed, but three conditions should be remembered: torsion of an undescended testis, acute hydrocele in an infant, and acute appendicitis in a hernial sac.

*Torsion of an undescended testis.*—The following case is given as an example.

A medical man, aged 27, had had a small right inguinal hernia for years, but it had only occasionally become complete. He was seized after breakfast with a violent pain in the centre of the abdomen, associated with shock and vomiting. In his right inguinal region was a tense and tender swelling, but the emptiness of the right side of the scrotum, the cessation of the vomiting, and the passage of flatus made the diagnosis clear.

*Acute hydrocele in an infant.*—No-one can have been in either general or surgical practice long without having been called by an anxious mother to see her

infant, who is having colicky abdominal pains and in whom a scrotal swelling has appeared. You are able to "get above" the hydrocele, and the child, although in pain and possibly vomiting, can pass fæces and flatus naturally.

*Acute appendicitis in a hernial sac.*—In this case there will be pain and tenderness over the lump, but the symptoms will be those of appendicitis and not of acute intestinal obstruction.

(3) May we be dealing with two conditions—namely, strangulated hernia and acute peritonitis from some other cause?

A colleague removed a gangrenous non-perforated appendix from a lady, the abdomen being closed without drainage. Four days later, influenza having overtaken my friend, I saw the patient, in whom the doctor in charge had diagnosed paralytic ileus, for she had pain, was vomiting, and had not passed flatus. The pain appeared to me to be more than I should have expected with that condition, and vomiting was frequent.

Careful examination revealed a small left femoral hernia, which was tense and tender, and on auscultation of the abdomen increased intestinal sounds were heard. The latter alone would exclude ileus, the only alternative diagnosis being a mechanical obstruction by kinking or adhesions. The tense and tender nature of the hernia showed that it was strangulated.

The following case also illustrates how a loop of bowel can be forced into a hernial sac and become strangulated when associated with the increase of intra-abdominal pressure that accompanies acute distension of the intestine.

A woman, aged 70, was admitted with a typical attack of acute cholecystitis, and a large and tender gall-bladder could be palpated. The patient began to vomit twenty-four hours later, and on examination a tense and tender swelling was found in the groin. Two enemas produced no result, and a correct diagnosis was made.

(4) Is it a strangulated partial enterocele? In a true partial enterocele (Richter's hernia) and in herniation of Meckel's diverticulum (Littré's hernia) the lumen of the bowel is not obstructed, unless in Richter's hernia more than half the circumference is involved, when the bowel becomes kinked. In all other instances fæces and flatus would be passed. The initial pain may be severe, but colic is commonly mild, and vomiting is neither severe nor persistent, especially since the terminal ileum is nearly always the site in either. The patient often does not consider the symptoms sufficiently severe to seek advice until the really grave event of perforation of the line of constriction into the peritoneal cavity. These herniæ are small and nearly always femoral, hence they may be overlooked.

In all cases, unless the diagnosis can be made at a fairly early stage the patient may be doomed. He will succumb to the toxæmia of the strangulation or to peritonitis resulting from perforation. The use of morphia is as dangerous in strangulation as in other acute abdominal emergencies and is more useless. Atropine is more effective than any other drug in relieving the severity of colic.

### SUMMARY

1. The reported case-fatality rate of 20–37 per cent. in strangulated hernia is mainly due to delay in diagnosis.

2. Changes take place due to fluid loss from simple obstruction and to the absorption of a highly toxic depressor substance.

3. The major symptoms are pain, vomiting, and inability to pass flatus; the minor ones distention, visible peristalsis and a palpable swelling.

4. In differential diagnosis we must consider the possibility of torsion of an undescended testicle, acute hydrocele in an infant, and acute appendicitis in a hernial sac.

## M. & B. 693 IN THE SALIVA

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THE salivary excretion of sulphanilamide given by intravenous injection has been observed in dogs (Marshall, Emerson, and Cutting, 1937); the concentrations in the blood and in the saliva varied with different animals receiving the same dose per unit of body-weight. This variation in the concentration in the blood of different human patients receiving equal doses per pound of body-weight has been observed by Stewart, Rourke, and Allen (1938), who further state that in man almost all the sulphanilamide is excreted in the urine in either the free or the acetylated form.

The excretion of M. & B. 693 in the saliva of man does not seem to have been examined.

TABLE I—CONCENTRATION OF M. & B. 693 IN SALIVA DURING THERAPY WITH THE DRUG

| Case No. | Interval between last dose and test | Total dosage | Dosage at time of test (T = tab.) | Concentration of free M. & B. 693 in saliva (mg. per 100 c.cm.) |
|---|---|---|---|---|
| 1 | 2 hours | 10 g. in 3 days | T. 2 t.d.s. | 3 |
| 2 | 6 ,, | 10 g. in 3 days | T. 2 q.d.s. | 8 |
| 3 | 2 ,, | 6 g. in 2 days | T. 1 4-hrly. | 9·5 |
| 4 | 2 ,, | ?27 g. in 9 days | T. 2 t.d.s. | 6·5 |
| 5 | 2 ,, | 9 g. in 3 days | T. 2 t.d.s. | 3·5 |
| 6 | 2 ,, | 23 g. in 5 days | T. 2 q.d.s. | 3 |
| 7 | 2 ,, | 14·5 g. in 7 days | T. 1 b.d. | Nil |
| 8 | 1 hour | 14 g. in 6 days | T. 2 t.d.s. | 26·5 |
| 9 | 2 hours | 16·5 g. in 8 days | 0·5 g. q.d.s. | 5 |
| 10 | 2 ,, | 9 g. in 4 days | T. 1 q.d.s. | 6 |
| 11 | 12 ,, | 4 g. in 24 hrs. | T. 2 t.d.s. | Nil |
| 12 | 12 ,, | 19 g. in 6 days | T. 2 t.d.s. | 4 |
| 13 | 2 ,, | 9 g. in 15 hrs. | T. 3 3-hrly. | 7·5 |
| 14 | 2 ,, | 15 g. in 6 days | T. 1 t.d.s. | 2·5 |
| 15 | 1 hour | 3·5 g. in 12 hrs. | T. 1 4-hrly. | 0·9 |
| 16 | 2 hours | 5 c.cm. by injection | 1 g. | Nil |
| | 22 ,, | .. | | Nil |
| 17 | .. | 12 g. in 60 hrs. | T. 2 t.d.s. | 3 |
| 18A | ½ hour | 3 g. by intramuscular injection in 30 hrs. | 1 g. M. & B. 693 soluble b.d. | 1·5 |
| 18B | ½ ,, | 18 g. in 9 days | 1 g. M. & B. 693 soluble b.d. intravenously | 0·8 |
| | 1 ,, | | | Nil } trace |
| | 2 hours | | | Nil } only |

REMARKS

CASE 5.—Stated he chewed all the tablets.
CASE 7.—Very low dosage.
CASE 8.—Simultaneous blood M. & B. 693 = 7·5 mg. per 100 c.cm. Saliva taken too soon after ingestion.
CASE 9.—M. & B. 693 given in mixture with sodium bicarbonate and bismuth carbonate.
CASE 11.—? Patient not saturated by short dosage.
CASE 15.—Stated he swallowed the tablets whole.
CASE 16.—? Patient not saturated by short dosage. Compare experiment 2.
CASE 17.—Simultaneous blood M. & B. 693 = 9 mg. per 100 c.cm.
CASE 18A.—Blood M. & B. 693 after 2 g. = 3 mg. per 100 c.cm.
CASE 18B.—Blood M. & B. 693 1 hour after injection = 4·4 mg. per 100 c.cm.

### PRESENT INVESTIGATION

In a number of patients receiving M. & B. 693 the amount present in the saliva was estimated (table I) and experiments were made to determine whether mechanical lodgment of fragments of the drug in the mouth could influence the results.

*Experiment* 1.—Samples of saliva and urine were examined to determine the presence of any substance capable of influencing the results. No such substance was found. Two normal young adults with healthy mouths (A. B. and C. D.) were then each given two tablets (1 g.) of M. & B. 693. A. B. merely rolled the tablets round the mouth for two minutes without chewing or swallowing, and then voided the contents of the mouth. C. D. chewed the tablets for two minutes, again without swallowing, and voided the contents. The mouth was then twice rinsed out with water. During the experiment no saliva was swallowed, but samples of saliva and urine were collected each hour and tested for the presence of free M. & B. 693. The results are shown in table II.

TABLE II—CONCENTRATION OF M. & B. 693 IN SALIVA AND URINE (EXPERIMENT 1)

| | | Free M. & B. 693 (mg. per 100 c.cm.) | | | | |
|---|---|---|---|---|---|---|
| | | Start | ½ hr. | 1 hr. | 2 hrs. | 3 hrs. |
| A. B. (tablets not chewed) | Saliva | 0 | 29 | 0 | 0 | 0 |
| | Urine | 0 | 0 | 0 | 0 | 0 |
| C. D. (tablets chewed) | Saliva | 0 | .. | 12 | 0 | 0 |
| | Urine | 0 | .. | 0 | 0 | 1 |

*Experiment* 2.—The urine and saliva of C. D. and E. F. were examined before the start as before; each then swallowed two whole tablets of M. & B. 693 without chewing or rolling them about the mouth; in each case this was immediately followed by rinsing out thoroughly twice. During the first half-hour saliva was collected and examined for free M. & B. 693 to exclude the possibility of any fragments lodging in the mouth. Hourly specimens of saliva and urine were examined as previously. The results are shown in table III.

TABLE III—CONCENTRATION OF M. & B. 693 IN SALIVA AND URINE (EXPERIMENT 2)

| | | Free M. & B. 693 (mg. per 100 c.cm.) | | | | |
|---|---|---|---|---|---|---|
| | | Start | ½ hr. | 1 hr. | 2 hrs. | 3 hrs. |
| E. F. | Saliva | 0 | 0 | 1 | 0·8 | 0·9 |
| | Urine | 0 | .. | 10 | 43 | 73 |
| C. D. | Saliva | 0 | 0 | 0·7 | 0·7 | 0·6 |
| | Urine | 0 | .. | 4·7 | 27 | 57 |

### COMMENTS ON RESULTS

In case 18 (table I) M. & B. 693 was found in the saliva although administration was solely by injection. Table III shows that M. & B. 693 appeared in the saliva and in the urine within an hour of ingestion; Baines and Wien (1939) noted it in the urine within sixty minutes.

The results seem to show that, if the tablets are swallowed normally, the amount of the drug remaining in the mouth after an hour is negligible, and that after continued administration of a dose of 3 g. daily the concentration of M. & B. 693 in the saliva approximates to 3–6 mg. per 100 c.cm. McMartin et al. have stated that most ambulatory patients cannot tolerate more than 1·5–2·5 g. daily, on which dosage the salivary concentration is very low. Further experiments have shown us that a concentration of 20–40 mg. per 100 c.cm. can be maintained for twelve to twenty-four hours by local application, and work along these lines was in progress when war broke out.

This investigation was instituted to provide evidence as to the value of sulphonamide drugs in dental lesions as successful results have been claimed in the treatment of Ludwig's angina, submaxillary abscess and pyorrhœa. Okell and Elliott (1935) and Round, Kirkpatrick and Hails (1936) have shown that streptococci may be carried from unhealthy gums direct to the blood-stream, and here the use of M. & B. 693 may offer some advantages. Pyorrhœa, however, is typically associated with pockets in the gums around the teeth, and it would appear difficult if not impossible to effect a clinical cure while these pockets remain.

### SUMMARY

M. & B. 693 has been found present in the saliva of patients receiving therapeutic doses. The view that this is not merely a mechanical lodging of particles is supported by some experiments.

Our thanks are due to the authorities of St. George's Hospital for their coöperation in the collection of samples of saliva and for their permission to publish this series of cases; to Mr. J. A. Gardner, Dr. R. M. Murray, Dr. Margaret Murray and Mr. F. J. Haydon for advice and assistance in connexion with the colorimetric estimations; and to Messrs. May and Baker Ltd. for a supply of M. & B. 693. The work was carried out during the tenure of grants from the Medical Research Council to one of us (P. P.).

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## PERFORATED PEPTIC ULCER

### AN ANALYSIS OF 100 CONSECUTIVE CASES

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BECAUSE of the large number of emergency operations performed in St. James' Hospital it was felt that a critical review of the last 100 perforated peptic ulcers operated on might be of value. This should be the more interesting because one of two similar operative techniques was used, apart from one patient who had a gastrojejunostomy besides closure of perforations.

### CLINICAL FEATURES

The last 100 perforations were operated on between Sept. 10, 1935, and March 3, 1939—just under three and a half years. The symptoms commonly attributed to acute perforation of a peptic ulcer have been fully confirmed. Sudden onset of acute pain, often causing collapse of the patient wherever he may be, is certainly the outstanding feature. In only 1 patient, a woman of 21, was severe pain missing; here all signs and symptoms were localised to the

right iliac fossa. The pain is described as "sharp"; any other type of pain is rare.

A history of indigestion is of value in diagnosis, but its absence is of little significance, for the patient is in too much agony of mind and body to think clearly. Direct questioning in this series revealed no history of indigestion in 4 cases and a history of less than six months in 7 others. The typical facies, so well described by Lord Moynihan, is almost always present. The absolute immobility of the patient is remarkable even to an untrained observer and is an important point in the diagnosis. Rigidity is absolute in the great majority of patients; in only 3 of this series was "board-like" rigidity absent. This rigidity does not pass off, no matter at what stage of perforation the patient is seen, until it gives place to the "rigidity with distension" of septic peritonitis.

We still see patients who have been given morphia before admission to hospital. It cannot be too strongly emphasised that this drug should only be given when the operating surgeon has satisfied himself of the diagnosis. The masking of signs and symptoms may mislead the surgeon and cause dangerous delay.

## TREATMENT

Treatment in this hospital is by immediate operation. If salines are considered necessary, an intravenous injection is given during and after the operation, but operation is not allowed to be delayed so that fluid can be introduced before the anæsthetic is begun.

Either Omnopon or morphine and atropine is in general use as premedication. The anæsthetist is a very important member of the surgical team, for he can ensure such relaxation that easy and quick approach to the perforation and its repair can be carried out with a minimum of handling. When the anæsthetic is given by a less competent man more handling, more soiling, and heavier retraction are necessary. Intratracheal nitrous oxide, oxygen, and ether is an excellent anæsthetic. A high spinal has been used successfully in several cases. Both of these methods need a high degree of skill, however, and a sufficiently expert anæsthetist is not always available, in which event open ether with a local infiltration of the recti muscles is safe and efficient.

The exposure is either by a midline or a paramedian incision. When the peritoneum is opened gas escapes and the stomach is seen to be distended. Palpation of stomach and duodenum reveals the induration surrounding the site of perforation. By lifting part of the stomach from the incision, the surgeon can bring the ulcer into view. Two stitches are inserted through the muscular coats of the organ well away from the perforation and on opposite sides of it. These are tied, the ends being left long. When these two stitches are lifted, the ulcer can be made to sink into a trough, the two sides of which can be held in approximation by two or more interrupted stitches. An omental graft is then laid over the suture line and held in place by knotting the two stray sutures over it.

The other technique used eliminates all stitches except the two stay sutures, the omentum being placed over the perforation.

Drainage has been used in 24 patients in this series; these had gross contamination of the peritoneal cavity. A localised abscess was formed in 3 cases; 2 of these had a drainage-tube inserted at the time of operation.

## CASE-MORTALITY

The total of deaths in this series was 23. A few of these cannot be solely attributed to the perforation, some of the causes of death being as follows:—

(1) Lobar pneumonia; died forty-eight days after operation.

(2) Massive hæmatatemesis; died immediately after hæmatemesis thirteen days after operation.

(3) Severe burns; admitted with severe burns of back and buttocks of some days' duration, and died as these were sloughing thirteen days after operation.

(4) Senile dementia; the patient pulled the stitches out and was resutured, but slowly sank and died twenty-nine days after operation.

(5) Pneumonia: admitted with a respiration-rate of 44.

The proportion of gastric to duodenal ulcers was 47 to 53, and 29 per cent. of patients with perforated gastric ulcer died in contrast with only 16 per cent. with perforated duodenal ulcer. There were 10 women, 5 with gastric and 5 with duodenal ulcers; 2 of those with gastric ulcer died, but only 1 with duodenal ulcer. In 1 patient there was a perforated duodenal ulcer in the presence of a well-functioning gastro-enterostomy performed sixteen years before. Double perforations were present in 2 patients: in one case a second perforation, which had not been recognised at operation, caused a fatal duodenal fistula and was discovered at autopsy; in the other case both perforations were closed and a gastro-jejunostomy was performed, with subsequent recovery. Some investigators have found the highest incidence of perforation in the summer months. This has not been our experience; 45 cases occurred between December and March.

The total mortality seems high; but, when examined with reference to the time between perforation and operation (see table) the results conform with those of most observers.

CASE-MORTALITY IN RELATION TO TIME OF OPERATION

| Hours before operation | Cases | Deaths | Mortality (per cent.) |
|---|---|---|---|
| 1–10 | 77 | 15 | 19·5 |
| 10–20 | 15 | 5 | 33·3 |
| 20–30 | 3 | 0 | 0 |
| Over 30 | 5 | 4 | 80·0 |

Of the patients operated on more than thirty hours after perforation, 1, at thirty-one hours, died; 1, at thirty-two hours, died; 1, at fifty-eight hours, recovered; 1, at seventy hours, died; and 1 at eighty-two hours, died.

The average age of our patients was 51, the youngest 21, and the oldest 77.

Many patients had other pathological lesions, notably bad teeth. The size of some ulcers and the massive amount of induration, of almost cartilaginous hardness, surrounding them were definite indications that operation was long overdue.

Perforation is only one complication of peptic ulcer. When we contemplate the misery of these patients, and consider the other complications with high morbidity and mortality we feel that surgery must be contemplated earlier in peptic ulcer than it is at present if we are to lower its killing power.

## SUMMARY

A series of 100 consecutive perforated peptic ulcers is reviewed.

Of these, 23 died, at least 5 deaths being not directly due to the perforation.

The series confirms the commonly reported symptoms and signs, especially the sudden onset and the sharpness of the pain.

Morphine should not be given before the operating surgeon has made his diagnosis.

The anæsthetic of choice is intratracheal nitrous oxide and ether, and a skilled anæsthetist can much reduce the risks and lighten the surgeon's task.

Early operation is essential in perforation, but patients with peptic ulcer should be operated on before perforation takes place.

I wish to thank the medical officer of health to the London County Council and the medical superintendent of St. James' Hospital for permission to publish this article.

## AN EPIDEMIC OF APPARENT INFLUENZA

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THE last extensive outbreak of epidemic influenza occurred in the Manchester district during the winter of 1936–37, and the influenza virus was isolated from several cases (Hoyle and Fairbrother 1937a). Since then until January, 1939, the condition has been quiescent, sporadic cases only having been reported. In January, 1939, the number of cases considered clinically as "influenza" began to show a sudden increase, and the outbreak rapidly assumed the features of a mild but widespread epidemic. The symptoms became more uniform than those exhibited by sporadic cases seen during the non-epidemic period of 1937–38, and the clinical picture showed many points of similarity with that generally found in epidemic influenza of virus origin.

During January and February 70 cases were investigated from the following sources, which were mainly in the Manchester district:—

| | Cases |
|---|---|
| Students who had been under observation for some months for infections of the upper respiratory tract | 10 |
| From a ward of a mental hospital | 13 |
| From the nursing staff of a hospital | 14 |
| From a mental hospital | 12 |
| From an institutional school near Blackpool | 8 |
| From the staff of a fever hospital | 2 |
| From miscellaneous sources | 11 |

### EPIDEMIOLOGY

The outbreak first appeared in the district at the end of December, 1938, and persisted until March, 1939; it was also widespread throughout the country. In the Manchester district the maximal incidence was in the middle of February, and few cases were reported after the end of that month. A detailed statistical survey was not made, but several striking features provided a comparison with previous outbreaks of true epidemic influenza. The 1939 epidemic was relatively prolonged; cases, though widespread, were mild, and complications, in particular influenzal pneumonia, were few. In comparison, the 1937 Manchester epidemic, a typical outbreak caused by the influenza virus, had a relatively explosive onset and was more extensive and more severe, and complications were commoner.

The 14 cases among the nursing staff of a hospital occurred among a staff of 180, of whom 21 were affected; but there was no rapid "peaking," and the outbreak persisted for some time. On the other hand, the 13 cases from a ward of a mental hospital were from an outbreak which attacked an isolated wing of the hospital, rapidly attained its maximal incidence, and as rapidly died down again. Altogether some 30 patients were affected, of whom 2 died. This localised outbreak possessed those explosive features which are at present associated with the participation of the influenza virus in the outbreak.

### CLINICAL ASPECTS

A great similarity exists between the symptoms of different cases of typical influenza during established influenza-virus epidemics (Stuart-Harris 1937); atypical cases in such epidemics are rarer than would be expected. On the other hand, when the main symptoms of a non-virus epidemic are considered, although some cases of febrile catarrh may closely resemble the virus disease, there are well-defined differences. The important features which Stuart-Harris emphasises are the sudden onset and short explosive nature of true epidemic influenza, and the predominance of the constitutional symptoms over the respiratory and nasopharyngeal. There is usually a slight posterior pharyngitis, but the inflammation in the upper respiratory tract is not so severe as would be expected if it were responsible for the general disturbance. By contrast, non-virus "influenza" or "febrile catarrh" has a more gradual onset, and the local inflammation in the upper respiratory tract is usually sufficient to cause the constitutional disturbance. Smorodintseff and his co-workers (1937), who infected human volunteers with the virus, have also shown that the virus disease produces a fairly typical symptom-complex in which the constitutional disturbance predominates. Local symptoms, however, were in many cases also pronounced, including hyperæmia of the nasal mucosa with œdema of the turbinates (40 per cent. of cases), followed by various degrees of nasal discharge, and hyperæmia of the fauces with swelling of the tonsils (28 per cent. of cases).

Andrewes (1939) has pointed out that in some epidemics cases closely resemble the virus disease, yet attempts to isolate the virus have been unsuccessful. This was true of the epidemic of January and February, 1939. Andrewes emphasises that it is not yet possible to diagnose true virus influenza on clinical grounds alone.

The symptoms of the cases as a whole seen in the epidemic under investigation were more uniform than those of sporadic cases in non-epidemic times; and, when the cases in any one localised outbreak were considered, the uniformity of the symptoms was even more accentuated. Thus laryngitis and hoarseness were distinctly more apparent during the epidemic than in sporadic cases investigated immediately before the epidemic, and the incidence of these two symptoms was particularly high in cases in institutions in the immediate vicinity of Manchester. On the other hand, in an institution in the Fylde district these symptoms were less evident and the amount of gastro-intestinal disturbance associated with the illness was increased.

The symptoms of 70 cases from the epidemic are summarised in table I and compared with cases from the non-epidemic period of 1937–38 and with cases of true epidemic influenza quoted from Stuart-Harris (1937). In the 1939 epidemic the percentages of cases with sudden onset was slightly higher than in the non-epidemic group. In general the table indicates that the symptoms of the 1939 epidemic lay midway between those of sporadic cases in non-epidemic times and those of true epidemic influenza.

TABLE I—SYMPTOMS OF THE 1937 AND 1939 EPIDEMICS AND OF SPORADIC CASES IN A NON-EPIDEMIC PERIOD

| Symptoms | Sporadic cases (54) in a non-epidemic period | 1939 epidemic (70 cases) | 1937 epidemic (true epidemic influenza)* |
|---|---|---|---|
| | (per cent.) | | |
| Premonitory symptoms.. | 30 | 20 | 13 |
| Sudden onset .. .. | 61 | 74 | 75 |
| Symptoms at onset: | | | |
| Headache .. .. | 67 | 66 | 54 |
| Muscular and arthritic pains .. .. | 41 | 19 | (21) |
| Nasal coryza .. | 39 | 35 | 15 |
| Cough .. .. | 48 | 35 | 20 |
| Sore-throat .. | 67 | 17 | 11 |
| Nausea .. .. | 13 | 15 | — |
| Vomiting .. .. | 4 | 0 | 6 |
| Symptoms during the course of the illness: | | | |
| Headache .. .. | 80 | 90 | 87 |
| Muscular and arthritic pains .. .. | 67 | 79 | (51) |
| Nasal coryza .. | 63 | 56 | 73 |
| Cough .. .. | 80 | 87 | 71 |
| Sore-throat .. | 78 | 77 | 43 |
| Nausea .. .. | 26 | 21 | 21 |
| Vomiting .. .. | 15 | 13 | 11 |
| Laryngitis .. .. | 15 | 40 | — |
| Malaise .. .. | 31 | 41 | 91 |

* Quoted from Stuart-Harris (1937).

## SEROLOGICAL INVESTIGATIONS

In view of the work of Magill and Francis (1938) and of Smith and Andrewes (1938) indicating antigenic differences in strains of influenza virus on the basis of the neutralisation test, it was considered preferable to rely mainly on the complement-fixation test as described by Hoyle and Fairbrother (1937b) for this investigation. By this test only one common complement-fixing antigen was demonstrated in all the strains of influenza virus which they investigated. It has been shown that this test is specific for the influenza virus, and that the complement-fixing titre of serum generally rises appreciably as a result of infection with the virus.

Sera from 22 cases were tested both before or during the early stages of the attack and later during convalescence. In each case no rise in the complement-fixing titre was detected. In a further 45 cases convalescent sera alone were examined. The titres of the sera of both convalescent groups are shown in table II for comparison with the distribution of titres in a group of apparently normal adults. It is seen that the titres of the sera of the convalescent groups are not raised above the normal level. A similar distribution in titre was found in sporadic cases of influenza during the non-epidemic period 1937–39. In contrast the titres of a group of patients convalescent from the 1937 influenza epidemic were quite different (Hoyle and Fairbrother 1937a). In the first three groups the highest titre was 1 : 16, and some 85 per cent. of sera had a titre of 1 : 4 or less. For the sera from convalescent patients, after an epidemic which yielded influenza virus the highest titre was 1 : 128, and 88 per cent. had a titre higher than 1 : 4.

Sera of 15 of the patients convalescent from the 1939 epidemic were also tested by neutralisation against the W.S. strain of influenza virus by the standard method in mice. The distribution of titres was within the normal range which would be expected in healthy adults, and no titres were found comparable to those in convalescent patients after infection by the virus. It may therefore be concluded that no serological evidence was found that the 1939 epidemic of "influenza" was caused by the influenza virus.

## ATTEMPTS TO ISOLATE THE INFLUENZA VIRUS

In 14 typical cases at the height of the 1939 epidemic attempts were made to isolate the influenza virus. Nasopharyngeal washings in saline-broth were taken from patients during the first twenty-four hours of the attack and were dealt with in most cases within one or two hours after collection. Bacteriological cultures were made in each instance, but evidence to incriminate any particular organism was never obtained. Ferrets and mice were used for inoculation.

*In ferrets.*—In 5 of the 14 cases the ferrets had a slight elevation of temperature forty-eight to seventy-two hours after infection and were lethargic, with frequent yawning, sneezing, and shivering. Post-mortem examination of 3 of these animals during this period showed that the nasal mucosa was injected, and that there were patches of bronchopneumonia in the lungs. In 1 ferret this was definitely due to bacterial infection, but in the 2 others no bacteria could be isolated from the pneumonic patches. The condition in 1 of these animals was successfully passed on to a second ferret by intranasal instillations of suspensions of the pneumonic patches, but it died out when an attempt was made to transfer it to a third. In the other case the condition died out during the second ferret passage. The 2 remaining ferrets which developed a febrile reaction were not killed but were each placed in intimate contact with normal ferrets in the hope that the disease would be conveyed by direct contact. This did not happen. Their sera were later tested by neutralisation against the W.S. virus with negative results.

These conditions in ferrets were not typical of infection by the influenza virus; the temperatures were not so high, and the lung lesions were often far more extensive. Finally, when the sera of the convalescent patients from whom these nasopharyngeal washings had been taken were later tested by complement-fixation, the titres were found to be low.

TABLE II—TITRES OF VARIOUS GROUPS TESTED BY THE COMPLEMENT-FIXATION TEST

| Titre | Convalescent patients in the 1939 epidemic | Apparently normal adults | Patients convalescent from sporadic influenza in 1937–39 | Convalescent patients in the 1937 epidemic* |
|---|---|---|---|---|
| 1 in 128 .. | 0 | 0 | 0 | 9 |
| 1 „ 64 .. | 0 | 0 | 0 | 13 |
| 1 „ 32 .. | 0 | 0 | 0 | 14 |
| 1 „ 16 .. | 3 | 3 | 1 | 10 |
| 1 „ 8 .. | 8 | 9 | 7 | 11 |
| 1 „ 4 .. | 19 | 14 | 13 | 8 |
| 1 „ 2 .. | 21 | 16 | 14 | 0 |
| Doubtful (1 in 2) | 5 | 14 | 8 | 0 |
| Negative (1 in 2) | 11 | 12 | 11 | 0 |
| Total .. | 67 | 68 | 54 | 65 |

* Quoted from Hoyle and Fairbrother 1937.

*In mice.*—In 12 of the cases attempts were made to isolate virus from the nasopharyngeal washings direct from man to mice by intranasal inoculation under anæsthesia. In each case, although there were originally no visible lesions, three or four serial passages of lung material were performed. In 3 instances consolidation of the lungs was produced, but these were later shown to be due to bacterial infection. Suspensions were made from all lesions obtained by post-mortem examination of infected ferrets and were administered to mice, but no lesions were produced in these animals.

### DISCUSSION

The evidence for concluding that the epidemic of clinical influenza which occurred in and about Manchester early in 1939 was not caused by the influenza virus is reasonably convincing. The virus was not isolated from typical cases by a technique which had succeeded on other occasions, and there was no increase in antibody titre of the sera of convalescent patients tested by complement-fixation.

In association with these facts consideration should be given to the clinical aspects of the epidemic. The symptoms were, on the whole, uniform and simulated those of epidemics caused by the influenza virus. This tendency to uniformity suggests that probably one ætiological agent was responsible. It was noted particularly that cases in a localised outbreak, such as in an institution, were alike clinically. It seems evident that a group of cases, such as those from a ward of a mental hospital, which closely resembled in clinical features infection due to the influenza virus and occurred in a sudden explosive outbreak must have been caused by a single ætiological agent. It seems equally clear that this agent was not the influenza virus; nor could a bacterial cause be demonstrated. The probability thus appears to be that the 1939 epidemic in this area was caused by a virus which has not yet been isolated. The reactions obtained in some of the ferrets inoculated with material from such cases lends support to this view.

It may be very difficult clinically to differentiate cases of infection with the influenza virus from those caused by some other agent. Moreover, the high contagiousness and rapid spread of infection—even in a localised group—cannot be taken as a sure indication of the participation of the influenza virus in the outbreak.

During the 1939 epidemic localised groups of cases were met which differed somewhat from the predominating clinical picture, such as the 8 cases from a school near Blackpool, in which gastro-intestinal disturbance was unusually prominent. The bacteriology of the stools from these cases was not investigated, and it is possible that such disturbances might have been associated with a bacterial infection secondary to the epidemic disease.

The investigation of this epidemic clearly establishes the necessity to search further for viruses other than the influenza virus which may be responsible for infections of the upper respiratory tract that occur in epidemic form and simulate clinical influenza.

### SUMMARY

Cases of apparent influenza occurring during a mild epidemic in January and February, 1939, have been investigated. Although in certain respects the outbreak clinically resembled epidemic influenza, evidence could not be obtained that the cases were due to the influenza virus. The ætiological agent was not determined.

We wish to thank the many people who kindly helped in the collection of specimens from patients.

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# CLINICAL NOTES

## TWO CASES OF PSITTACOSIS

BY W. G. A. SWAN, M.D. Durh., M.R.C.P.
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PSITTACOSIS can be contracted from contact with birds other than parrots. Meyer and Eddie (1934) found a fatal case of psittacosis among 200 freshly trapped Australian budgerigars, and later they demonstrated the virus in 8 out of 60 apparently healthy birds in the batch. Meyer, Eddie, and Stevens (1935) gave a list of birds which had been found to be susceptible to psittacosis by placing them in the same pens as infected parakeets. This list includes the parrotlet, conure, and cockateel (Psittaciformes). Birds other than psittacines were also found to be susceptible, such as the canary and more especially the Java sparrow (order Passeriformes, family Ploceidæ). Of the Java sparrow they said, "They may serve as sentinels for the detection of the presence and dissemination of the virus in a room or pen in which parakeets with latent psittacosis are held." They also report 2 cases of psittacosis in human beings due to contact with canaries. Haagen and Maurer (1938) found the virus in exotic finches and in native German coaltits and siskins. In the Faroe Islands an epidemic of psittacosis was traced to fulmar petrels (*Lancet* 1939).

The following 2 non-fatal cases of psittacosis in human beings occurred last year in Newcastle-on-Tyne. The source of infection was apparently budgerigars, which in one case seemed to be healthy.

### CASE-RECORDS

CASE 1.—A crane slinger, aged 37, was admitted to Newcastle General Hospital on April 19, 1938. Ten days before admission, while at work, he began to shiver and felt a pain in his back. He went straight to bed. From the onset of the illness his breathing had been difficult, but there was only slight cough and little sputum. His throat was sore for the first few days. The backache persisted for a week but had disappeared on admission. The bowels were constipated. His previous health had been very good.

The patient was a bird-fancier and kept cage birds in his back yard. He bred canaries and had about six in good condition. He had bought four budgerigars from a dealer in February, 1938, and had sold them on April 15, four days before admission. He said the budgerigars appeared to be healthy. He himself looked after the birds, and his wife and his son were not ill.

*On admission.*—Temperature 101° F., pulse-rate 104, and respiration-rate 24. No rash. He was a stout man of good physique and was in little distress. Mouth, tongue, and fauces were dry and brown coated. Lungs: no dullness to percussion, but loud crepitations at both bases, especially on the right. The breath sounds were not tubular. Nothing abnormal detected in heart, abdomen, or central nervous system. Urine: specific gravity 1·030;

acid; no albumin or sugar. Blood examination: hæmoglobin 65 per cent.; white cells 13,750 per c.mm.; polymorphs 84 per cent.; eosinophils 1 per cent.; lymphocytes 9 per cent.; monocytes 6 per cent.

*Subsequent course.*—The temperature remained continuously raised, reaching 104° F., and, owing to the suspicion of psittacosis raised by the picture of an anomalous pneumonic condition and his hobby of keeping budgerigars, he was transferred to the City Hospital for Infectious Diseases on the 21st. Cyanosis appeared, dyspnœa became more severe, and drowsiness and muttering delirium developed. The temperature fluctuated between 100° and 103° F., but the pulse-rate remained relatively slow.

About the thirtieth day of the disease improvement began. The temperature and pulse-rate from now were normal, although there were still pneumonic signs in the lungs. By the forty-fifth day only a few fine râles were heard, and on the fifty-ninth day he was discharged in good general condition with no abnormal physical signs in the chest.

*Radiograms* taken on the fourteenth and twenty-seventh days suggested bronchopneumonia.

*Blood* from the patient was obtained on the eleventh day of the disease and sent to Prof. S. P. Bedson, who reported a strongly positive complement-fixation test against psittacosis antigen (see table).

*Sputum* obtained on the twelfth day was inoculated into mice by Professor Bedson but gave a negative result.

*The suspected budgerigars* were traced with some difficulty, and all four were killed and sent to Professor Bedson, who subsequently reported that he had successfully isolated the virus of psittacosis from mice inoculated with emulsions of the spleens of the birds. Inquiries were also made of the dealers from whom the patient had bought the infected budgerigars.

COMPLEMENT-FIXATION TESTS IN TWO CASES OF PSITTACOSIS

(antigens + 2 m.h.d.)

| Serum | Psittacosis | Control | Saline | Psittacosis | Control | Saline |
|---|---|---|---|---|---|---|
| | Case 1 | | | Case 2 | | |
| ½ .. .. | ++++ | − | − | ++++<br>++ | −<br>− | −<br>− |
| ¼ .. .. | ++++ | − | − | +++<br>++ | −<br>− | −<br>− |
| Known + ½ | ++++ | − | − | ++++<br>++++ | −<br>− | −<br>− |
| Known − ½ | − | − | − | − | −<br>− | −<br>− |
| Saline .. | − | − | − | −<br>− | −<br>− | −<br>− |

It was found that they were dealers only and not breeders of the birds. Many of these birds had been sold locally in the area, and no cases of illness had been reported either among the birds or among persons receiving the birds, and the dealer's present stock of budgerigars, about thirty, seemed to be in good health.

*Second admission.*—After his discharge from hospital on May 29 the patient felt weak, but he started work again in the last week of June. Fourteen days later he complained of a sharp pain in his left side and called in his doctor, who told him he had pleurisy. He stayed in bed for fourteen days, but when he got up the pain returned. He began to sweat, but otherwise he did not feel ill. He was admitted to Newcastle General Hospital on August 3, 1938.

*On examination* he had a temperature of 101·4° F., pulse-rate 96, and respiration-rate 24. He was not in any distress. Lungs: there was dullness, with reduced breath sounds and absent vocal fremitus, over the left base. The chest was explored, and slightly turbid yellow fluid was found. Microscopical examination showed a moderate number of red cells and lymphocytes and a few polymorphs. No organisms were seen, and there was no growth after forty-eight hours. Radiography showed an effusion at the left base and between the left upper and middle lobes, with displacement of the heart to the right.

*Subsequent course.*—At the end of the first week the temperature had reached normal and remained there. The breath sounds had returned to a considerable extent at the time of his discharge on August 19, 1938. He was seen again in December, by which time he was working regularly and felt perfectly well. There was now no dullness over the lungs, and the air entry at both bases was normal. He wrote in June, 1939, that his health was excellent.

CASE 2.—A motor mechanic, aged 48, was admitted to Newcastle General Hospital on July 18, 1938. Three days before admission he felt suddenly unwell and thought that he had influenza. There were severe headache, generalised pain, and two sharp attacks of epistaxis. He had worked up to the time of admission.

*On admission.*—Temperature 101° F., pulse-rate 96, and respiration-rate 24. He was flushed, the tongue coated, and the breath offensive. The throat was not inflamed. The stools were relaxed and green. There was no rash. Lungs: at first there were no abnormal physical signs, but on the sixth day there was dullness at the left base, with a few crepitations, and tubular breath sounds were heard at the left base on the eighth day. Nothing abnormal was detected in the abdomen, heart, or central nervous system. The urine was acid, with a specific gravity of 1·030. No albumin. Sugar present.

*Subsequent course.*—The temperature remained continuously raised for a week, varying between 103° and 100·4° F. The pulse-rate never rose above 104. By this time the clinical picture of an illness resembling influenza with a continuous high temperature, lung signs, and severe prostration suggested psittacosis. The patient admitted that he had obtained two love-birds at a local fair on June 22. The birds did not appear to be healthy and they both died in about ten days. Neither his wife nor his two children were affected. The patient was transferred to the City Hospital for Infectious Diseases as a suspected case of psittacosis on July 25. Thereafter recovery rapidly took place. The temperature settled to normal by the fifteenth day of illness, and the signs in the left lung disappeared at about the same time. Convalescence was uneventful, and the patient when seen in July, 1939, was in perfect health and working regularly.

*Blood* was sent to Professor Bedson on July 26, (eleventh day of illness) for a complement-fixation test. He reported that "the serum contained a considerable amount of psittacosis antibody. Although the reaction it gives is weaker than that given by the majority of convalescent psittacosis sera, it is sufficiently strong to be highly suspicious" (see table). The suspected birds were disinterred but were found to be in such an advanced state of decomposition that it would have been useless to submit them for examination.

## SUMMARY

Two cases of human psittacosis are described in which the infection was apparently derived from budgerigars. In one case the budgerigars were apparently healthy, but the virus of psittacosis was demonstrated in them; in the other case the birds were ill when obtained by the patient and later died.

Attention is called to the occurrence of the infection, often latent, in birds other than parrots, notably in the small psittacines but also in birds of the order passeriformes.

Our thanks are due to Dr. J. A. Charles, medical officer of health of Newcastle-on-Tyne for permission

to publish these cases, and to Professor Bedson for permission to use his reports on the material submitted to him.

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## A SIMPLE TREATMENT OF WOUNDS

By Philip Weatherbe, M.B. Edin., F.A.C.S.

LATE LECTURER IN SURGERY IN DALHOUSIE UNIVERSITY; SURGEON TO THE CHILDREN'S HOSPITAL, HALIFAX, NOVA SCOTIA

For thirty years I have used the same method of treatment for all wounds, from a pinprick to a compound fracture. The method, which is simple, practical, and efficient, is one of continuous drainage. Its advantages include the prevention of complications, a better functional result than can be obtained by other methods, freedom from inflammation and pain, and a minimum of scar tissue. Not only does it prevent sepsis in a clean wound but it overcomes sepsis already established.

The technique consists in the application of wet boric lint to the surface of the wound. The boric lint must contain equal parts by weight of boric acid and lint. Immediately before being applied it must be saturated with cold water and not wrung out. The entire area of the wound is covered with this wet lint, on top of which is placed oiled silk (best quality), which must in turn entirely cover the lint to seal it off hermetically and keep it from becoming dry. The dressing is kept in place with a bandage or towel. If the correct technique is carried out, the lint will still be wet on the removal of the dressing, even if left unchanged for as long as a week.

This treatment has proved satisfactory in such various conditions as compound comminuted fracture of the skull accompanied by laceration of the brain, wound of the hand due to a pickaxe driven right through it, severing of all tendons on the back of the forearm by a punctured knife-wound, gunshot wound of the hand, wound of the hand due to explosion of a dynamite cap, severe laceration of the hand with severing of tendons by a machine, compound comminuted fractures of the leg and arm, and suppurating wounds and whitlows.

The following are illustrative cases.

Case 1.—A boy, aged 5, was admitted to the Children's Hospital, Halifax, with a compound fracture of the middle of the shaft of the right femur, accompanied by much contusion and laceration of the muscles. After immediate open reduction and Lane's plating of the bone the wound was enlarged, tincture of iodine was applied to the surface, a rubber dam was inserted as far as the bone, and finally a dressing of wet boric lint and oiled silk was applied. The dressing was first changed forty-eight hours later to remove the rubber dam, and for the second time five days later, when it was seen that there was no inflammation or other complication. The final result was perfect alignment of the bone, with full normal function.

Case 2.—A boy, aged 6, was admitted to the hospital with a temperature of 102° F. and a severe lacerated wound of his leg due to a motor truck running over it and crushing it from below the knee to the sole of the foot. The skin was slit for the whole length of the laceration of the muscles. Antitetanic serum was administered, and, without the use of any antiseptic and without any preliminary cleansing of the wound, wet boric-lint dressings were applied for six weeks, when skin was grafted on a healthy granulating surface. The patient was discharged a month later with full function of the limb, the wound having healed perfectly.

Case 3.—A boy, aged 5, was admitted to the hospital with suppurative synovitis of the left knee-joint. His temperature varied from 100° to 101° F. His illness had lasted three weeks before admission. He was treated by conservative methods for the first fortnight when large lateral incisions were made into the joint and staphylococcal pus was evacuated. This was followed by daily active full movements of the joint and by continuous drainage by the application of dressings of wet boric lint. On his discharge after four months he had perfect function.

# MEDICAL SOCIETIES

## MEDICAL SOCIETY OF LONDON

At a meeting of this society on Dec. 11, with Mr. Zachary Cope, the president, in the chair, a discussion on

### Induced Pyrexia

was opened by Dr. F. J. Nattrass. He compared malarial and artificial pyrexia in the treatment of general paralysis of the insane, and declared that whatever method of producing fever was used the fever alone had any importance, though it might not in all cases act by the same mechanism. Theoretically, the method which most consistently provided a sustained fever should be the most successful, and, judged by this test, physical were superior to chemical or bacteriological methods. Working with Dr. S. F. Evans, he had obtained good results with a simple hospital-made radiant-heat cabinet in conjunction with an electrical recording thermometer. The best insurance against disaster was a thorough knowledge of the chosen system and the closest observation and care of the patient. He compared the figures of the Minister of Health for results of malaria therapy between 1927 and 1937 with the statistics collected by C. A. Neymann for the results of physical methods, and with the results obtained by his colleagues and himself. The most outstanding point of superiority for physical methods was their low mortality, and during the last four years he had treated 213 cases without a death. Unlike malaria, electrical treatment did not make the patient ill, and it caused relatively little discomfort. Complications, such as anæmia and jaundice, did not occur, and the fever could be precisely controlled. Fever should be given until the maximum clinical response had been obtained. On an average Dr. Nattrass gave four to six rigors at 106° F., each lasting eight hours. Thermotherapy should be supplemented by specific treatment, especially with tryparsamide and bismuth. These, however, should not be injected during the rigor. Fever caused a fall in the cell-count of the cerebro-spinal fluid, but any change in the Wassermann and Lange reactions was slow. For sedation he had used paraldehyde and morphine, but during the later stages of induction remarkably little sedative was needed. An adequate water intake should be maintained, and therefore consciousness should not be reduced beyond the limits of the patient's power to drink freely. An adequate chloride reserve

should be provided by saline drinks. About 300 c.cm. of fluid might be lost every hour. For safe and effective treatment the staff must be specially trained, and the work ought to be done in a special department under a physician who was interested. Not all cases of general paralysis were suitable for electropyrexia. The patient must be capable of a certain degree of coöperation and at least must be non-resistant. Fever must be used discriminately.

Fever was more potent in generalised than in primary gonorrhœa and was rather a reserve method for resistant cases, and for extensions such as gonococcal arthritis. It probably had a specific lethal action on the gonococcus. The temperatures associated with the best figures of cure were, however, near the limits of safety. The resistance of different strains varied considerably, and a rational treatment required a determination of the time taken to kill the organism present. In 92 per cent. of cases cures had been obtained with a single course of ten hours' fever; this was practicable and safe for use as a routine. The physical signs of tabes dorsalis were not influenced by fever but symptomatic benefit was said to be marked if specific drugs were also given. Dr. Nattrass had not himself been impressed by the results in 12 cases which he had treated. Neymann's results in cases of syphilitic optic atrophy suggested that fever deserved a further trial. Gummatous cerebrospinal meningitis was resistant to chemotherapy but had proved amenable to pyrexia. No case had been made out for the routine use of fever in early syphilis. In asthma claims had been made for 50 per cent. of remissions; relapse was usual but remission could be repeated. His own experience had not been encouraging. In some cases of chorea movements had been promptly checked and the total duration reduced. Active carditis was not a complete contra-indication; indeed, there was some evidence of benefit to the heart. He doubted, however, whether fever was generally indicated in chorea, which usually responded so well to simpler measures.

Dr. GEORGE GRAHAM described methods of maintaining the temperature after the inductothermic current had been turned off. The patient was usually more comfortable when his temperature exceeded 106° F. and an electric fan blew on his face, than when he lay at a lower temperature without a fan. Temperature could be adequately regulated by exposing one arm when it reached a certain height. About gr. ¼ of morphine should be given after the fever was induced. Nembutal had been tried but some patients were unduly sensitive to it, especially if there was liver damage. Though the Wassermann and the Sigma readings changed little, the cell-count showed a significant drop and the Lange curve showed a beneficial change after eight or ten fevers. There was no evidence that the malaria parasite had any specific effect on the spirochæte. All his 35 patients had bad herpes labialis. Female patients with gonorrhœa were sometimes relieved by thermotherapy although the gonococcus persisted in the urethra. He recommended fever for bad cases of asthma and had found that it reduced the quantity of adrenaline required to control the paroxysms. Fever had been strikingly successful in one case of chorea—a dumb and violent child who had improved enormously after two rigors. A case of rheumatic pneumonia had done very well and the pneumonia had not been made worse. In the early stages of subacute infective arthritis or rheumatoid arthritis fever therapy was very effective, but if the disease was well established good and lasting results were unlikely to be achieved. Dr. Graham's usual practice was to give four or five fevers and then discharge the patient and see how much improvement took place. A few cases of spondylitis had been immediately relieved and their range of movement extended; fever should be continued until the sedimentation-rate had stabilised, showing that the acute phase was over. He believed that the nursing staff was usually quite capable of supervising thermotherapy.

The PRESIDENT said that the method might be interpreted as a direct criticism of physicians in general, who when a patient had fever seemed primarily concerned to combat it, instead of regarding it as an attempt of the organism to cure the disease. To lower the temperature did not always make the patient better, and might endanger him by inducing a false appearance of improvement. He asked if any drugs were known which would cause fever by their action on the heat-regulating mechanism. He was interested by the suggestion that the herpes of pneumonia was due to the fever. He had never seen it associated with heat-stroke, even when the temperature reached 106° F.

Dr. C. B. HEALD asked whether the opener had tried the effect of milder pyrexia—e.g., a temperature of 102° F.—applied every day. This could be given under conditions which did not allow hyperpyrexia, one of the essentials of which was an accurate electrical thermometer. In chronic arthritis where a gonorrhœal origin was suspected it seemed to give results equal to those of hyperpyrexia.

Mr. J. JOHNSTON ABRAHAM criticised malaria for needing hospitalisation for a week or a fortnight, and for sometimes getting out of hand and becoming chronic. Good results had been obtained with a temperature of 104° F. produced by T.A.B. vaccine every three days for a fortnight. Hyperpyrexia should be tried in the 10 per cent. of gonococcal cases that resisted the sulphanilamide.

Mr. WILLIAMSON NOBLE spoke of the extraordinary success of short-wave current in secondary glaucoma, possibly by the production of change in the condition of the aqueous. He had also used it with success, combined with colchicum, in a case of iritis.

Dr. NATTRASS, in reply, said that in disease only hyperpyrexia and not ordinary fever required active treatment. He knew of no drug which would act on the heat centre to produce fever. Only hyperpyrexia would cure gonococcal arthritis. He did not intend to use induced pyrexia in acute rheumatic fever. Prolonged high fever might well be tried for intractable chronic iritis.

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**IODINE AND POLITICS.**—Many years ago when a party of London surgeons was visiting the principal Swiss surgical clinics the conversation turned on the ability of Switzerland to keep neutral during the war period 1914–18. A Swiss surgeon then suggested that it was, in part at least, the result of thyroid deficiency widespread in Alpine regions. Since that visit iodised salt has been given as a routine to school-children in some of the Swiss cantons and its effect is now visible in the younger generation. Nevertheless thyroid insufficiency may have something to do with the calm with which the Swiss people is approaching the situation today for the effects of iodinising the population are still too recent. But let us not forget, our informant adds, that William Tell did not himself have the benefit of iodised salt. ("N'oublions pas, toutefois, que Guillaume Tell n'avait pas encore bénéficié du sel iodé.")

# REVIEWS AND NOTICES OF BOOKS

## Congenital Heart Disease

By JAMES W. BROWN, M.D. Lond., M.R.C.P., physician to the Grimsby and District Hospital; physician to the Grimsby Corporation and Lindsey (Lincs) rheumatism and heart clinics. London: John Bale Medical Publications. 1939. Pp. 255. 21*s*.

UNTIL recent years congenital heart disease remained largely of academic post-mortem interest, and its clinical, sociological and even medico-legal significance was not realised. The impetus of Maude Abbott's work has made it an important branch of cardiology, but it has needed concise presentation in this country. This admirable monograph, inevitably indebted to a great pioneer, is based on a large series of personal cases observed over a number of years. Special emphasis is laid on those lesions capable of clinical recognition by modern methods. Recent work on development is clearly summarised. The bulk of the book is concerned with the individual lesions, the classification of Abbott and Dawson into non-cyanotic and cyanotic groups being followed throughout. As further acknowledgement of its importance, both in diagnosis and prognosis, cyanosis receives a chapter to itself. The author also sets out the classification of T. J. Dry, based on broad embryological grounds. For each group he includes an account of the radiological and electrocardiographical findings, and these special methods as well as the newer angiocardiography are further considered in a later chapter. He discusses differential diagnosis fully, and gives a useful summary of the principal diagnostic points. The book is attractively bound, well illustrated, and contains a full bibliography. It will fulfil its author's deeper purpose if it promotes a more widespread knowledge of how to manage the lives of those who are born with a permanent heart defect.

## Relation of Trauma to New Growths

*Medicolegal Aspects*. By R. J. BEHAN, M.D., Dr.Med. Berlin, F.A.C.S., surgeon to St. Joseph's Hospital, Allegheny, Pennsylvania. London: Baillière, Tindall and Cox. 1939. Pp. 425. 22*s*. 6*d*.

THE publication of a comprehensive review on a broad statistical basis of the relation between trauma and the development of new growths is an event of considerable importance to forensic medicine. The whole subject has been so coloured by the overweening influence of circumstantial evidence that the literature is probably less reliable than that on any other medical subject. Dr. Behan's book is comprehensive, well arranged, discoursive and reputable, though he shows a certain lack of grip on the almost unmanageable mass of detail which must perforce go into a volume of this kind. He has clearly set out to produce the evidence rather than return a verdict. A third of the book is given up to the validity of the evidence and this part culminates in a series of "postulates." Dr. Behan goes on to detail the literature of occupational new growths and ends with successive chapters on tumours in the various organs. He quotes innumerable cases in detail and there are extensive references at the end of each chapter: the bibliography is easy to handle and reliable. To those engaged in both medicine and the law in relation to civil compensation the book will be a virtual necessity, and "to the harassed doctor who on a pillory between cupidity and conscientiousness must decide to satisfy his conscience and not appease his greed," it will prove a trustworthy guide.

## Blood Groups in Africa

By RONALD ELSDON-DEW, M.D., assistant pathologist. Johannesburg: The South African Institute for Medical Research. 1939. Pp. 94.

THIS monograph contains the results of long and patient field-work on the blood-grouping of peoples over a large area of East Africa. The expedition travelled 15,000 miles under primitive conditions and had many adventures. Dr. Elsdon-Dew concludes that the original black race must have separated from the remainder of mankind before the Bush and Hottentot races. The Egyptians and the pygmies have probably been responsible for the introduction of gene B to Africa, and it migrated down the western side of the continent from both centres. The proportion of A among the blacks must have been considerable before B was introduced, having spread mainly on the eastern side of the continent and reached a maximum in the pygmies. Both genes spread into the various black peoples. The intermediate Bantu carried gene B far to the south, where contact with the Bush peoples decreased its proportion; and to the west coast, where it may have been reinforced by the transmission of B from Egypt. The high and equal proportion of A and B among the Hottentots suggests that these peoples are predominantly of Egyptian or proto-Egyptian type. The results are tabulated in great detail and illustrated by many ingenious diagrams.

## Diathermy

*Short-wave Therapy, Inductothermy, Epithermy*. By WILLIAM BEAUMONT, M.R.C.S., physician-in-charge of the physiotherapy department, Westminster Hospital, London. London: H. K. Lewis and Co. 1939. Pp. 303. 10*s*. 6*d*.

THIS comprehensive manual is addressed both to the student preparing for the examination of the Chartered Society and to the practitioner interested in diathermy. Successive chapters describe the physical character of the current employed, the generators and physiological basis of treatment, the risks, and the general and local application of this treatment to disease, and finally high-frequency and short-wave diathermy. Dr. Beaumont's attempt to base treatment on physiological considerations reveals the paucity of our knowledge in this field. The medical reader will be struck by the contrast between the highly technical language of the chapters dealing with current and apparatus, and the elementary and rather diffuse presentation of those on clinical applications. This inequality probably springs from the double purpose of the book.

## A Textbook of Medical Bacteriology

By DAVID L. BELDING, M.D., professor of bacteriology and experimental pathology, Boston University school of medicine; and ALICE T. MARSTON, Ph.D., assistant professor of bacteriology and immunology, in the school. London: D. Appleton-Century Company. Pp. 592. 21*s*.

IN this book Professor Belding and Dr. Marston have aimed at giving a concise yet comprehensive account of the applications of bacteriology to medicine. They have treated the general aspects of the subject adequately and have given more attention than is usual to such things as the transmission of communicable diseases, man as a source of infection, animal reservoirs of infection and bacteriological and

serological diagnosis, and have allowed sanitary and economic bacteriology sixty pages. They have laid their main emphasis on the practical applications of bacteriology and immunology to public health and preventive medicine and have dealt with the purely scientific aspects of immunity in a separate section. In spite of the inclusion of much material not found in the smaller textbooks the treatment of the common bacterial infections has not been curtailed. The illustrations are few and some of them are not particularly instructive, but there are many useful tables throughout the book.

### Sanitary Inspector's Handbook

(4th ed.) By HENRY H. CLAY, F.R.San.I., F.I.S.E., lecturer in sanitary engineering, London School of Hygiene and Tropical Medicine. London: H. K. Lewis and Co. 1939. Pp. 528. 17*s.* 6*d.*

THIS may now be considered a standard textbook for the sanitary side of public health. The chief alteration in the new edition consists in the complete revision of the section on food and food premises in the light of the Food and Drugs Act, 1938. The consolidation of the general law relating to public health has also allowed the sections on sanitary law to be more detailed and these and other improvements have required an additional 30 pages, making a total increase of 142 pages over the first edition published in 1933. Perhaps the time has now come for pruning the growing tree, but it is hard to find any dead wood to cut away. A possible improvement might lie in consolidating the scattered references to port health work into a separate section, including some reference to the hygiene of crews' spaces: if canal boats are worthy of a special chapter, surely port health administration also requires one?

### Cancer of the Colon and Rectum

By F. W. RANKIN, M.D., F.A.C.S., surgeon to St. Joseph's and Good Samaritan Hospitals, Lexington, Kentucky; and A. STEPHENS GRAHAM, M.S., F.A.C.S., surgeon to Stuart Circle Hospital, Richmond, Va., and assistant professor of surgery, Medical College of Virginia. London: Baillière, Tindall and Cox. 1939. Pp. 358. 30*s.*

THIS book is divided into three parts. The first deals with anatomy and physiology, including a full account of the vascular supply of the colon and rectum, with its surgical applications. The authors discuss the incidence of carcinoma of the large intestine and say that according to the latest American statistics it comprises about 15 per cent. of all cancers. They describe the pathology of adenocarcinoma in detail and some beautiful photomicrographs, contributed by Dr. A. C. Broders himself, clarify the description of his four grades of malignancy. Part two deals with operability and prognosis, with statistical tables indicating the expectation of cure according to the site of the primary lesion, the grade of malignancy and the depth of spread as shown by Dukes's classification. In view of Dr. Rankin's unrivalled experience the chapter on choice of operation is extremely valuable. Part three covers the complete range of operations from cæcostomy to excision of the rectum with a wealth of practical details. The authors' outlook in regard to treatment is orthodox and unhesitatingly radical, and their opinions will be studied with particular comfort by that large body of surgeons who, in extirpating cancer of the rectum, believe with Rankin that "radical surgery is well worth while and that radical surgery may not be applied save by the use of colostomy."

### Human Pathology

(5th ed.) By HOWARD T. KARSNER, M.D., professor of pathology, Western Reserve University, Cleveland, Ohio. London: J. B. Lippincott Company. Pp. 1013. 45*s.*

IT is a pity that Karsner's Pathology is not better known in this country, for it has much to commend it and it is usually the first line of reference for teaching and working pathologists who are familiar with it. It is arranged on orthodox lines, being divided into general and special pathology, and rightly eschews the teleological interpretation of disease. The section on general pathology is wisely fuller than is usual in textbooks, for if a student thoroughly understands the underlying processes of disease special pathology is simple and can to a large extent be arrived at by deduction. Throughout the book there is a wide appreciation of the recent advances of experimental pathology, which are too often ignored in standard textbooks. In the special pathology section the chapters on disorders of the intestinal tract and endocrine glands are particularly good but that on blood-diseases is disappointing, pernicious anæmia being disposed of in a page and the more recent work on hæmoglobin breakdown and iron metabolism being omitted. The chapter on the female genital organs, though dealing fully with the endocrinal tumours of the ovary, omits all mention of the functional changes in the endometrium. Yet as a whole the book is an admirable summary of modern pathological knowledge. It is well illustrated, and a particularly pleasing feature is a full bibliography of the more important papers at the end of each chapter.

### Chemistry of Synthetic Drugs

(4th ed.) By PERCY MAY, D.Sc. Lond., F.I.C., consulting chemist and patent agent; and G. MALCOLM DYSON, Ph.D., F.I.C., A.M.I.Chem.E., chief chemist, Genatosan Ltd. London: Longmans, Green and Co. 1939. Pp. 370. 21*s.*

THE most interesting feature of the fourth edition of this well-known textbook is the stress laid by the authors on the correlation of the chemical structure of synthetic drugs with their pharmacological action. It is natural that this should be so in a British book on synthetic drugs since it is this aspect of the subject which has proved most attractive to workers in this country. Nevertheless, it is still only possible to formulate within narrow limits rules connecting chemical structure with pharmacological action, and in the discovery of a useful new drug patience, perseverance and luck play at least as important a part as the skilful application of chemical and pharmacological knowledge.

Though the book has been revised thoroughly and in most respects is well up to date there are points here and there which need attention. Thus, the authors seem to be unaware that pilocarpine and its associated alkaloids have been synthesised and that there is no longer any doubt as to the stereochemical relationship of pilocarpine and isopilocarpine. In the section dealing with organic antimony compounds no mention is made of the careful work of Gray and Trevan on the constitution of urea-stibamine, nor the useful clinical investigations of Napier in India and of Struthers and others in China, which have placed the treatment of kala-azar on a sound footing. But the authors have produced a remarkably interesting book, which should be particularly useful now when war has brought home to the medical profession that in spite of progress in the home production of synthetic drugs we are still more dependent than we should be on foreign sources of supply.

THE LANCET

*LONDON : SATURDAY, DECEMBER 23, 1939*

## GET TOGETHER

WE hear much of active service, but the conditions of stationary warfare in the winter months have condemned a large part of the medical profession to something more like inactive service. On another page Professor RYLE suggests a recipe to counteract boredom and maintain interest and efficiency, and it is natural that one regius should go back to another for an illustration of what he has in mind and recall the well-known chapter in "Æquanimitas" on the educational value of the medical society. Curiously enough, OSLER was not by nature a clubbable person. Marian Osborne who lived in the same house at Montreal when he became the "baby professor" at McGill, and used to watch him coming down the street at a swinging pace with the spring on the ball of the foot, noted the early struggle to overcome his lack of elocution, his shyness and the Osler reserve. It is an encouragement to us all to think of OSLER not as born complete with the qualities that make a medical society successful. When he wrote that no class of man needs friction so much as physicians and no class gets less—"the daily round of a busy practitioner tends to develop an egotism of a most intense kind to which there is no antidote"—he was speaking of things of which he knew, and was well aware of the tendency of solitary work to make a man touchy, dogmatic, intolerant of correction and (his own phrase) abominably self-centred. To this mental attitude, said OSLER, the medical society is the best corrective, and a man misses a good part of his education who does not get knocked about a bit by his colleagues in discussions and criticisms. Professor RYLE looks back on the last war as one of his most vivid and instructive experiences. The good comradeship, the absence of the competitive evil, the living and working at close quarters, the unanimous effort to do the best possible for the individual sick or wounded; all this, he remarks, provided an atmosphere not yet inherent in less united civilian organisations. In any medical society it is this factor of personal contact which supplies the dynamic. The member of a live society feels that his job is not solitary and he gets the chance of a working friendship with someone whose approach to life and medicine is congenial to his own. Moreover there is in our present situation the added advantage of relative juvenility and it should hardly be necessary to revive the rule of an old Gloucestershire society to admit no new member whose age exceeds 40. It is admitted, however, that the social age of many venerable officers of medical societies remains at a vigorous prime.

## CANCER CLINICS

ONE striking result of the dislocation of ordinary hospital organisation has been the urgency of the public demand that facilities for treating cancer should again be provided. The campaign to make known the importance of early diagnosis has clearly carried conviction. With this in mind the section of the Chief Medical Officer's report which deals with cancer merits careful study. He begins by pointing out that the number of deaths attributed to cancer shows the customary rise. Cancer of the mouth, including lip, tongue, mouth, tonsil and jaw, accounts for 2308 male and 432 female deaths; stomach 7063 male and 5748 female; colon and rectum 6125 male and 5554 female; lung 2930 male and 823 female; breast 6922 and uterus 4462. The grand total being 68,605. These are among the most important cancers, and some of them are the accessible growths curable in the early stages. The National Cancer Service, defined in the Cancer Act 1939, represents the effort of the Minister of Health to coördinate through the local authorities the diagnosis and all the methods of treating cancer—surgery, radium and X rays. The existing facilities for the surgical treatment of cancer are thought to be adequate, though it is recognised that if the service succeeds in bringing patients to treatment at an early stage increased facilities will be required. The stock of radium and the deep X-ray apparatus with the specialised medical staff necessary for radiotherapy are not so easily obtained. Excluding London, there are now 18 radium centres set up by the National Radium Commission, and new centres will probably be required. Local authorities will have to unite to make centres, or will make arrangements with suitable voluntary hospitals. Their schemes will be submitted to the minister, who will have the help of a specially appointed subcommittee of experts on cancer on which all the branches of medicine concerned with treatment and administration are represented. This committee should in our opinion advise against any great increase in the number of centres. Even common forms of cancer are seen in a very small number of cases per unit of population, and because the study of a number of similar cases always makes for greater efficiency in treatment, as many as possible should be collected at large major centres, where the best that can be offered of surgery, radium and X rays is available. It is proposed to establish consultative and diagnostic clinics in smaller towns in the region, staffed by visiting experts from the centre. These clinics will be held when possible in local general hospitals. It is clear that it must be possible for the visiting surgeon to recommend the transfer of patients to the centre for special investigations or surgery requiring a high degree of skill. A good example is an abdomino-perineal excision of the rectum where the advantage of having a surgeon who performs this operation often is great.

The number of centres where first-class radiotherapy can be given is limited not so much by

the expense of the apparatus as by the supply of trained therapists. It is only within the last few years that it has been recognised that efficient radiotherapy is the province neither of the surgeon, who occasionally implants radium, nor of the radio-diagnostician giving what time he can to X-ray therapy. To use both radium and X rays to the best advantage some surgical training and a good grasp of radiation physics are needed, and for the purposes of the act clinical knowledge of cancer in all its manifestations as well. To ensure that radiation treatment is in charge of really competent workers, and to give opportunities for training therapists, a high degree of centralisation will be more effective than the creation of individual treatment units.

## DEGREES OF INSANITY IN LAW

MEDICINE and the law do not regard responsibility from the same angle. The Atkin committee, containing a strong forensic element, obviously desired to discourage the "mistaken notion" that all insane persons are irresponsible. "The far-reaching effect of granting immunity to every one who can be said to be of unsound mind is perceived," it observed, "when the medical conception of unsoundness of mind is considered." The medical man's anxiety that insanity and irresponsibility should be not identified arises in a different way; the identification, it is feared, might deprive mental patients of such legal powers—e.g., the making of a will—as they now possess. In non-criminal contexts the law has evolved its own classifications of insanity. The 17th century took the person who was *non compos mentis* and classified his condition under three types of *dementia—naturalis*, *accidentalis* (subdivided under *furor*, *rabies*, *mania* and so on), and *affectata*—i.e., drunkenness. To come down to modern times, legal writers have pointed out that section 341 of the Lunacy Act of 1890 allowed "lunatic" to include "idiot," although in the Idiots Act of 1886 (repealed and replaced by the Mental Deficiency Act of 1913) "lunatic" on the one hand and "idiot" or "imbecile" on the other were mutually exclusive terms. Recently the laws which have permitted incurable unsoundness of mind to be a ground of divorce in England, Scotland and Northern Ireland have linked the dubieties of the mental state with the solid fact of five years' continuous detention in a mental hospital. Here the courts accept a very different standard from that of criminal irresponsibility. As to wills the existence of insanity in a testator at the time when he makes his will creates a presumption against testamentary capacity; confinement in an asylum has strengthened the presumption. But the presumption can be rebutted by evidence that the insanity or delusions are irrelevant to the matters which form the subject of the will, or by evidence of a lucid interval at the material moment. A lucid interval is not merely the cessation or suppression of the symptoms of mental disease nor, according to Lord Eldon in the Holyland case, need it be a complete restoration to the mental vigour previously enjoyed. Lord Eldon, it may be added, should have been a good judge of lucid intervals. As Lord Chancellor to George III during the periods of the King's unfortunate disability, he had to decide from time to time whether his sovereign was mentally fit to give the royal assent to Acts of Parliament or to approve royal commissions for the purpose. There was a period in 1804, in the midst of war, when the establishments of the armed forces of the Crown might have lapsed for want of the royal assent to a Mutiny Act. Lord Eldon fortunately found the King able to assent. There was grave doubt in 1811 when the Lord Chancellor almost miraculously found His Majesty fit to assent to the bill appointing a regent. Lord Grey, in a House of Lords debate, thought that Eldon's hasty opinion, formed during a brief interview, was hardly sufficient to outweigh the considered conclusions of the King's medical attendants. Campbell, who wrote Eldon's life, relates that the Lord Chancellor always stoutly asseverated that the royal signature was never obtained, nor the royal pleasure taken on any act of State, when the royal mind was not clear and collected. This statement, he added candidly, it is very difficult to credit.

## GESTURE

SOME years ago a deaf-mute patient presented himself at the National Hospital, having had a mild stroke. An incomplete right-sided paralysis passed off quickly, but it left him with an inability to express himself by way of his accustomed sign-talk. Aphasia had in fact occurred in a mute person. This case led Dr. MACDONALD CRITCHLEY to explore that older instinctival language—the language of gesture—and he has recorded his findings in a delightful little book.[1] Evidence from developmental and comparative philology suggests that gesture may have preceded verbal speech. But it is more than a parent, for gesture has expanded in company with its offspring. From it have sprung such art-forms as miming, pantomime, and aspects of dancing, and such everyday actions as saluting, shaking hands, and kissing. Demosthenes considered that the first, second and third points in oratory were movement—but now the microphone has robbed the public-speaker of the language of gesture, and until television comes into its own he must rely more upon the reason than the emotions of his audience. Dr. CRITCHLEY would separate gesture from pantomime. Gesture, he says, should be used only for movements which accompany speech for the sake of emphasis, while pantomime is dumb-show aiming at expressing an idea. The salute is then pantomime; the uplifted hands of the soldier as he cries "Kamerad" is gesture. This distinction is too flimsy to be of great value, though it has a certain convenience. In both these actions, the underlying emotional intention

1. The Language of Gesture. By Macdonald Critchley, M.D., F.R.C.P. London: Edward Arnold and Co. 1939. Pp. 128. 5s.

is the same—to demonstrate that the hands carry no arms.

The origin of speech is still an unsolved problem. An imitative origin has been postulated, the "bow-wow" and "ding-dong" hypotheses of MAX MÜLLER, to cover such words as hum, buzz, chirp, squeak, purr and twitter. An interjectional theory, dubbed by MÜLLER the "pooh-pooh" theory, suggests that certain sounds follow naturally from certain emotions (the sound "st!" suggests stopping—as in "stand still!", whist and hist). PAGET suggested that the tongue, lips and jaw unconsciously followed the gestures of the hands—the "yo-heave-ho" hypothesis. In vowel sounds he found expressive meanings. Thus "ah" in English suggests something wide, flat or spacious; "ee" suggests the high or the little (steeple, teeny, peak); "aw" denotes a cavity (yawn, maw); "oo" something tubular or enclosed (room, tube, loop), and so on. A test on oneself will illustrate that each of these vowel sounds carries with it an appropriate gesture.

In left-sided cerebral lesions speech suffers much more than gesture. Most aphasics can express themselves clearly by pantomime. Sometimes indeed pantomime language may develop to such a degree as to compensate for the loss of normal speech, and Dr. CRITCHLEY tells of a girl who could take telephone messages and communicate their contents to her family solely by means of pantomime. In some diseases—disseminated sclerosis, Wilson's disease and chorea, for example—the movements of gesture are exaggerated, while the strange poses and attitudes of schizophrenics often seem to have an obscure symbolic meaning. The sign-talk of deaf-mutes is probably very ancient, although the modern deaf-and-dumb alphabets date only from the eighteenth century. In France and the U.S.A. the unimanual system is usual, while in England and elsewhere both hands are used. In addition to the usual dactylography, all deaf-mutes possess a manual shorthand, in which a single gesture may indicate a word, a phrase, or even a sentence. This language has not been codified and is largely international. Many of its signs are probably instinctive survivals of the pre-speech era, for example, patting the stomach to denote hunger or tapping the brow to indicate thought. Dr. CRITCHLEY discusses sign-language among primitive peoples, in religion, in secret societies and in oriental literature, and the use of gesture in conversation and public-speaking, miming, dancing and the theatre. Finally, he sums up the evidence for gesture as a precursor of speech and concludes that both probably developed pari passu.

# ANNOTATIONS

## HEALTH OF CHILDREN OF SCHOOL AGE

FOR the past four months the school health services, built up with so much labour during the last thirty years, have been allowed to lapse, and the position cannot be met by rhapsodising on the delights of children being in the country. In the first place at least a million children are where they were before the war and, having no school to attend, their standard of cleanliness has dropped below its natural level, whatever that was. The authorities have now decided that the time has come when the school health services must be resumed in their ordinary premises, subject to being available for casualties if need arose. Unfortunately it is not immediately practicable to provide education in school for all the unevacuated children, and since the health services are based upon the schools means must be taken to enlist the coöperation of parents, care-committee workers and health visitors in order to bring to school clinics all the children in need of treatment. A circular issued by the Board of Education on Dec. 14 enjoins local education authorities to make up the leeway of the last four months. The objective should be to secure a constant stream of children to be overhauled and where necessary treated in the hope of completing the review within the next three months. Even when the children are not attending school it should be possible to provide free meals and milk for them or to arrange for parents to send their children to schools or centres to receive milk on payment. In the reception areas there is a special difficulty to be faced—namely, the inadequacy of the medical, dental and nursing staff to meet the needs of the largely increased number of children. Local authorities are reminded that they are responsible for providing evacuated children with health services of the same standard and scope as are provided for the local children. Circumstances of many families have worsened as a result of the war and a close watch on the nutrition of the children is essential in order to detect new cases of under-nourishment at an early stage. Actually during October there was a large reduction of the milk consumed under the milk-in-schools scheme and this must speedily be put right. The circular is right in insisting that the health services, being now doubly important, should be strengthened and extended wherever they do not fully meet the needs of the children.

## NEW VIEWS OF TOOTH-ERUPTION

A NEWLY erupted tooth has the enamel covered with a thin horny cuticle known as Nasmyth's membrane, of epithelial origin. It used to be thought that this extended to the neck of the tooth and there blended with the inner surface of the collar of gum surrounding the neck of each tooth. It was imagined that when a tooth first pierced the gum there was a space between the gum extending to the neck of the tooth and that the process of eruption, partly by an active advancement and partly by a denudation or uncovering of the crown, resulted in this hood of gum shrinking until the tooth was fully erupted. When this stage was reached there was a narrow collar of gum surrounding the neck of the teeth and forming what was called the gingival trough. Professor Gottlieb[1] challenges this conception at several points. The horny cuticle consists of two layers, one of which invests the whole surface of the enamel while the outer layer is reflected outwards and unites with the epithelium of the gum. But the point of reflection, instead of being always

1. Biology and Pathology of the Tooth and its Supporting Mechanism. By Bernhard Gottlieb, formerly professor of the Vienna Dental School, research professor, Columbia University dental school; and Balint Orban, assistant professor, Northwestern University dental school, Chicago. London: Macmillan & Co. 1939. Pp. 195. 22s.

at the neck of the tooth, is at first much nearer the extremity of the crown and migrates rootwards pari passu with the eruption of the tooth. Eruption consists of two phases, active and passive. The first is the active advancement of the tooth until it comes into occlusion with its antagonist. When this stage has been reached the gum may still cover part of the crown of the tooth and the reflection of the epithelial cuticle may be in the region of the midline of the crown. The second stage of eruption then begins. This consists essentially of a migration of the epithelial attachment towards the root accompanied by a proliferation of epithelial cells into the periodontal membrane. This goes on until the whole crown is uncovered. But it does not end there and goes on further until a part of the root becomes exposed. According to Gottlieb there is never at any stage a gingival trough or space between the gum and the tooth but merely a crevice. This passive eruption is a long-continued one and may go on for years. It is not necessarily uniform round the circumference of a tooth but may take place to a greater extent on one surface. The recession of the gums which leaves a part of the root exposed is thus a normal process and does not of necessity indicate a pathological condition. The borderline between physiology and pathology is somewhat indeterminate. The presence of local irritation or the influence of some abnormal metabolism may accelerate this process and turn a physiological change into a pathological condition. Gottlieb describes three forms of the condition known familiarly as pyorrhœa. First there is dirt pyorrhœa of local causation where the irritant factors bring about a disorderly and unusually rapid passive eruption; secondly there is parodontal pyorrhœa characterised by a purulent pocket, and lastly, there is diffuse alveolar atrophy leading to a wandering of the teeth owing to weakening of the alveolar bone. The two latter are due to metabolic factors. Gottlieb's theories are novel but the volume of proof he adduces leaves little doubt that the process he describes is substantially correct. There is some comfort in the reflection that the process of getting "long in the tooth" is an inevitable stage in eruption, and not necessary a form of pyorrhœa.

## RECURRENT ABORTION

In their investigation into recurrent abortion MacGregor and Stewart[1] decided that the first step was to find out as much as possible about the normal production of hormones during pregnancy, particularly that of the gonadotropic hormone and progesterone. They did not consider it practicable to estimate these substances in the blood, so that the output was calculated on the urinary excretion. After what must have been a large number of tedious and difficult assessments, they put forward the hypothesis that the pituitary gland through its secretion of gonadotropic hormone stimulates the ovary and so the production of progesterone; this in turn stimulates placental production of gonadotropic hormone which reacts on the ovary; the corpus luteum ultimately stimulates placental activity to the point at which it also begins to secrete progesterone; and thereafter the corpus luteum diminishes in activity. The danger period in pregnancy is therefore the time when placental activity is developing and corpus luteum activity is retrogressing. It is well known, in fact, that this danger period is towards the ninetieth day of pregnancy, just the time when the early high excretion of hormones is settling down to a steady, relatively low rate. They also draw the conclusion that from the known efficacy of small doses of progesterone the margin between adequate and inadequate progesterone production is extremely narrow. Though the dosage is relatively small, the injection at least twice weekly of such an expensive substance as progesterone goes against a wide application of this treatment. Dodds[2] has lately suggested that in Pregneninolon there may have been found a substance effective when taken by mouth. If this should prove to be for the corpus luteum a counterpart of stilbœstrol for the follicular hormone, then the treatment of recurrent abortion should be greatly simplified.

1. MacGregor, T. N., and Stewart, C. P., *J. Obstet. Gynæc.* October, 1939, p. 857.

## THE SYNAPSE

The idea of the synapse and its strategical importance in central coördination and integration need exponents no longer; interest and experiment is now focused on the problem of how it works. And it is fitting that a collection of papers[3] on the synapse, reprinted from the *Journal of Neurophysiology*, should be dedicated to C. S. Sherrington, for he introduced both the concept and the word itself, and his classical experiments have shown no strain under the weight of subsequent work. Lorente de Nó, by his skilful use of the fibre tracts entering the oculomotor nucleus, has clarified the process which takes place at a single fibre-termination or synapse. The packets of energy brought by nerve impulses in one fibre are mingled with those brought by a score of others, and the meeting ground is the extended surface of the cell-body of the next neurone in the chain. Their effects depend not only on the numbers which arrive but on how they are spaced from one another in both time and distance. Singly, they are evanescent and ineffective. It is now clear that the state of excitation produced in a group of motor neurones by stimulation of afferent nerves owes many of its characteristic properties—such as its relatively long life—to the multiplication of impulses by self-re-exciting chains of intermediate neurones. The actual event occurring at a single synapse is as transient as the disturbance in a fibre when an impulse passes. This leads to the crux of the problem. Does something quite new and unexpected happen at the synapse, or is transmission of excitation from one neurone to the next merely a special case of nerve conduction as we know it in the continuous fibre? Gasser and Erlanger show that the properties of nerve-fibres and their impulses are by no means simple or incapable of furnishing a basis for the explanation of central phenomena. Lorente de Nó deals with the centre itself. In his own words: "the action currents of nerve impulses may prove not to be the agents for synaptic transmission, but everything happens as if they were."

In point of fact, few would venture to do more than mention the possibility of an alternative in the central nervous system. But in autonomic ganglia it seems that there is more than a possibility that preganglionic act on postganglionic neurones by liberating acetylcholine instead of or in addition to action currents. The superior cervical ganglion has been a battle-ground in this country for some years, and Bronk, who uses the stellate ganglion, does not attempt to decide the conflict one way or the other. The evidence for humoral transmission from postganglionic autonomic fibre to effector organ is overwhelming, and there is also evidence that acetylcholine

2. Dodds, E. C., *Lancet*, Nov. 4, 1939, p. 999.
3. Symposium of the Synapse. By H. S. Gasser, Joseph Erlanger, D. W. Bronk, R. L. de Nó and Alexander Forbes. Reprinted from *J. Neurophysiol.* 1939, **2**, 361. Springfield, Illinois: Charles C. Thomas. 1939. Pp. 114. $2.

is concerned in the passage of excitation from motor nerve to voluntary muscle. The latter is a rapid type of transmission, and belongs, moreover, to the somatic nervous system. The working of the central synapse cannot, therefore, be predicted from its affiliations, but must rest entirely on experiment. The proponents of electrical transmission are so far in possession of the field.

## PHONOCARDIOGRAMS IN SCHOOL-CHILDREN

INTEREST in the electro-mechanical recording of the normal and abnormal sounds produced by the heart seems likely to be stimulated by the excellent work done in this field in South America. Boone and Ciocco [1] have investigated the phonocardiograms, or "stethograms," of 1482 unselected school-children of both sexes. The tracings were examined with regard to rhythm, configuration of the first sound waves, systolic vibrations, split-second sound, diastolic vibrations, and third heart sound. In this preliminary report they attempt no correlation with the findings of ordinary clinical examination, nor with the electrocardiograms which will be reported on later. The only abnormalities of rhythm they found were isolated extrasystoles (nine cases) and bigeminy (one case) due to alternate extrasystoles. The systolic interval was free of vibrations in only 41 per cent. of cases, the remainder showing some vibrations though usually of small amplitude. The incidence of these vibrations was found to decrease with increasing age. A third heart sound was discovered in about 13 per cent., though the method of its production, which can be deduced from simultaneous venous pulse curves, is not given, split-second sound in 16 per cent., and diastolic vibrations in 0·5 per cent. These observations should help in defining the normal stethographic pattern in children, and may also aid the early recognition of cardiac pathology when the significance of variations from what is termed the basic pattern has been assessed. For this purpose long observation of the children and correlation of the stethographic picture with clinical findings is obviously required.

## SIMMONDS'S DISEASE AND ANOREXIA NERVOSA

UNTIL recently most people have regarded Simmonds's disease and anorexia nervosa as essentially similar, the distinction resting mainly on the discovery of an initial psychological factor which is responsible for the loss of appetite in anorexia nervosa. Valuable above other descriptions of anorexia nervosa is that of Gull, now 70 years old, to whom we owe both the name and the generally accepted view that the anorexia and associated consequences are the product of a disordered mind. It is a tenet of the English tradition that the clinical features of the established disease are the simple result of starvation. However, between a third and half the cases have amenorrhœa either with the anorexia or even before it, and this cannot be attributed to starvation. The menses may cease suddenly in healthy women as the result of mental strain or shock. Thus Macgregor [2] found that among first-year nurses at the Edinburgh Royal Infirmary no less than 29 per cent. had during the first year of their training an amenorrhœa of from one to ten months' duration. Such a functional amenorrhœa is accompanied by a diminution or absence of sex hormones in the urine.

The original paper of Gull [3] had little influence outside this country, and in particular it remained almost entirely unknown in German-speaking countries. Indeed, up to about 1930 anorexia nervosa seems to have attracted no special attention in Germany. The description by Simmonds [4] of the clinical effects in the human being following the destruction of the anterior pituitary aroused some interest in anorexia nervosa, and resulted in large numbers of cases being described, in all good faith, as instances of Simmonds's disease. Sheldon [5] has found over 18 instances of this misreporting, and about half the published cases of anorexia nervosa are indexed under other names. Why is it that so many people regard anorexia nervosa as organic and, with almost complete unanimity, incriminate the anterior pituitary as the cause of the disease? In some fashion we have to incorporate into the English way of looking at anorexia nervosa an adequate explanation for such a widespread error. The two conditions have in common loss of weight, amenorrhœa, lowered basal metabolism, alterations in carbohydrate metabolism, subnormal temperature, slow pulse and hypotension. The agreement is far too close to be a matter of mere coincidental similarity. One is forced to the conclusion that at some stage a common path is used in the production of these symptoms. If the body adjusts itself to a diminished food-intake by an immediate decrease in anterior pituitary activity, it becomes merely a question of words whether one regards the signs of anorexia nervosa as being a functional Simmonds's disease or as being due to starvation.

Sheehan [6] has now thrown further light on the problem by detailed analysis of 51 published cases of Simmonds's disease due to postpartum necrosis of the anterior pituitary. He makes the startling estimate of 2 severe cases and 7 lesser ones per ten thousand of the population; if this is so, there must be cases sitting in every outpatient department, whether medical, gynæcological, or neurological. The original necrosis occurs at a delivery which is invariably complicated by collapse, usually as a result of severe hæmorrhage. Following this there develop a number of signs and symptoms which vary in frequency and severity according to the size of the original necrosis, and probably according to other factors. A typical severe case may be thus described:

> During the puerperium there is no secretion of milk and there may be hypoglycæmia. Later the uterus becomes abnormally small and the external genitalia atrophy. Menstruation does not return and libido is absent. There is a gradual loss of axillary and pubic hair. The patient is apathetic and dull, unable to do her housework, and very sensitive to cold. She may appear myxœdematous or prematurely senile. Weight is little altered unless appetite is absent. Blood-pressure is rather low and the basal metabolic rate is some 25 per cent. below normal. Hypochromic anæmia is present, sometimes associated with a definite eosinophil leucocytosis. The blood cholesterol may be a little raised and the blood-sugar rather low, but sugar-tolerance tests give a curve with a delayed fall. After 10, 20, or 30 years the patient may become more obviously myxœdematous, or may develop mental changes with anorexia and some loss of weight. At this stage the anæmia may become hyperchromic, the basal metabolic rate may fall to minus 35 per cent. the blood-pressure remaining normal. Finally, usually as a result of some intercurrent illness or a phase of severe anorexia, the patient goes into coma and dies, usually with hypoglycæmia. Post mortem the anterior pituitary is represented chiefly by the large scar of the original postpartum necrosis, the suprarenal cortex is atrophic,

1. Boone, B. R., and Ciocco, A., *Milbank Mem. Fund Quart.* October, 1939, p. 323.
2. Macgregor, T. N., *Brit. med. J.* 1938, **1**, 717.
3. Gull, Sir William, *Med. Times and Gaz.*, 1873, **2**, 534.
4. Simmonds, M., *Dtsch. med. Wschr.* 1914, **40**, 322.
5. Sheldon, J. H., *Proc. R. Soc. Med.* 1939, **32**, 738.
6. Sheehan, H. L., *Quart. J. Med.* 1939, **8**, 277.

the thyroid usually shows fibrous atrophy, the ovaries and uterus are shrunken and the viscera are small.

Substitution therapy is as yet not satisfactory; but if the woman becomes again pregnant the symptoms are permanently cured, probably as a result of hypertrophy of the remaining portions of anterior-lobe tissue. In most reports it is stated that the characteristic and fundamental symptom of Simmonds's disease is severe emaciation. This view probably derives from the fact that three of the original cases described by Simmonds were so thin as to lead him to introduce the rather misleading term "pituitary cachexia." Actually, any severe degree of emaciation is, however, quite uncommon, and the patient who begins to lose weight rapidly usually dies before she becomes seriously emaciated. This standard requirement of a severe loss of weight for the diagnosis of Simmonds's disease appears to be the reason for most of the errors in diagnosis. Many cases of Simmonds's disease are probably missed because the patients are of normal nutrition. On the other hand, a large number of spurious cases are diagnosed on the basis of severe loss of weight, combined with amenorrhœa and a low basal metabolic rate. Most of these cases are really cases of anorexia nervosa.

In textbooks Simmonds's disease is usually illustrated by the photograph of a woman reduced to skin and bone. Such pictures are never taken from true cases of Simmonds's disease, in which the state of nutrition is hardly ever sufficiently abnormal to merit photographic illustration.

## ALLOTTED SPAN OF THE RED CELL

LIFE is maintained by the circulation through the body of dead envelopes of hæmoglobin. We can now recognise and name some of the events which lead to the maturation and death of the red blood cell, but there is still little known of the period of useful activity between the death of the erythrocyte and its final destruction by the reticulo-endothelial system. How long do the red blood-cells survive or perhaps more correctly what is their span of life and after-life? The answer is no longer purely of physiological interest for with the greater use of blood transfusion it is very much a problem of practical medicine. On the indirect evidence of daily estimations of iron, urobilin and nitrogen excretion or of reticulocyte counts many would reply about thirty days. A good deal of evidence, however, points towards a longer survival time and Ashby [1] believed it was nearer two months. Her method was to give group O corpuscles to people with group A blood, and by using potent anti-A serum instead of the usual diluting fluid the unagglutinated cells counted (as distinct from the permanently unagglutinable cells) were believed to be donor erythrocytes. The method is clumsy and was duly criticised, but it deserves credit as the first attempt at ear-marking the red cells and making possible a direct method of following their fate. When Landsteiner described the M and N agglutinogens in human corpuscles it became possible to give patients blood of their own group which could be readily identified. It will be remembered that all human red cells contain either the M, N or MN factors and that agglutinins to them are only developed in the rabbit. It is possible, therefore, to transfuse a patient whose blood belongs for example to group AN with donor cells of group AM, which can at a future time be recognised by anti-M sera. Landsteiner himself kept an eye on transfused red cells by this means but it is difficult not only to find patients with appropriate blood-groups, but also to follow patients (who are generally very ill) for a sufficient length of time. Martinet,[2] who used this technique, was able to follow up only 7 of his 14 suitable patients. In his experiments he sometimes used the hetero-agglutinogens alone and sometimes both hetero- and iso-agglutinogens —that is he combined Ashby's with Landsteiner's technique. If the recipient's blood belonged to group AMN and the donor corpuscles were ON the recipient's cells were agglutinated in the test-tube by anti-M serum leaving the ON or donor cells free in the supernatant fluid. Martinet makes the point that after repeated injection of a foreign hetero-agglutinogen, hæmolysins may develop in the patient's blood and upset calculations. With this and other points such as the age, sex and health of the patient in mind, however, he believed that fresh transfused red cells may survive in the recipient for more than two months. This view is supported by H. J. N. Dekkers [3] who studied patients of the same blood-group, but with different hetero-agglutinogens. He could detect the donor corpuscles in two patients who had received only 50 c.cm. of blood, thus demonstrating the delicacy of the test. Of 35 patients he was able to complete observations in 12 and he found that the transfused red blood-cells were still detectable in from 55 to 75 days. These figures represent the survival time of fresh erythrocytes in the circulation of another person and take no account of the time in development from erythroblast to erythrocyte. Fresh transfused blood naturally consists of cells of all ages, but if only 50 c.cm. of these are youthful then it may be we can tell how long they persist. The method is still open to many of the justifiable criticisms of Ashby's observations, but it is a direct way of studying the problem and it involves a minimum of physiological upset. These studies are at least links in a chain of evidence which makes a strong case for a much longer span of activity of the normal erythrocyte than is commonly believed. We have to accept the fact that there are vitally important dead cells in the body which can continue to function much longer than many living cells.

1. *J. Exper. med.* 1919, **29**, 267.

## LIVER PUNCTURE

DIAGNOSTIC puncture of the liver was first carried out by Lucatello in 1895, but the procedure has never attracted more than spasmodic interest. Two Scandinavian workers, Iversen and Roholm,[4] have lately revived it and have reported the results of 160 punctures. As opposed to the older methods in which a fine needle was used, they employ a trocar and cannula, which they introduced across the transpleural space under local anæsthesia. They thus aspirate a small column of liver tissue which is sectioned and stained in the usual way. They claim that one should not fail to obtain liver tissue for examination in more than 10–15 per cent. of cases, and they say that the procedure causes the patient little inconvenience. The risks attached to the operation seem to be slight, though they have not yet had enough experience to be dogmatic on this important point. If this method is really safe, it should open an unexplored avenue in liver pathology. It belongs, however, to a class of special investigations that are only likely to yield results in the right hands; it is emphatically not to be recommended to all and sundry.

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Sir BERNARD DOCKER has succeeded Alderman Sir Harold Pink as chairman of the British Hospitals Association.

2. *Sang*, 1938, **12**, 15. 3. *Acta med. scand.* 1939, **6**, 587.
4. Iversen, P., and Roholm, K., *Acta med. scand.* 1939, **102**, 1.

# SPECIAL ARTICLES

## PRACTICAL PSYCHIATRY IN WAR-TIME

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IN the last war I had three years' experience in a military psychiatric clearing centre in south-west Germany. The centre was in constant contact with the base hospitals from which it got its patients, and with the treatment hospitals of the district to which suitable cases were sent after being diagnosed. I had no experience with psychiatric cases in or immediately behind the front line during the first year of the war when I was a battalion medical officer.

Generally speaking, the clinical work did not differ very much from what was observed by psychiatrists in other belligerent countries. I had no experience with psychological casualties among civilians, although the towns of the district were frequently bombed in 1917 and 1918, and although civilian cases were not excluded from the centre; their number must have been negligible. But in this war I doubt if the incidence of neuroses will be so small and recovery as quick as reported from Barcelona by Professor Mira. The psychological background of a civil war in which everyone fanatically takes one side is quite unlike that of a modern mass war between nations in which the individual is less personally involved and perhaps more ready to escape into a neurotic illness.

Psychiatric casualties among soldiers in war-time can be divided into three groups. (1) Major psychoses; such cases are dealt with in peace-time by psychiatrists. (2) Minor psychoses or "war neuroses"; before the last war these were largely treated by the general practitioner or the neurologist, but their apparent increase in war-time led to the calling-in of the psychiatrist as the appropriate expert. (3) Psychological sequelæ of brain injury; this is a relatively small group in peace-time and forms part of the neurologist's clientele, but in war their greater frequency and often the nature of the clinical picture makes the coöperation of the psychiatrist indispensable.

### Major Psychoses

The calling-up of a great number of people of the age when the manic-depressive and schizophrenic psychoses become manifest for the first time means that these conditions must be expected among soldiers. Careful examination at recruiting centres will exclude some possible candidates. Many difficulties and many pensions can be avoided if the recruiting medical officer refers all doubtful cases to a psychiatrist or a psychiatric clinic. It is even more important that during training all mental peculiarities should be reported to the battalion medical officer, to whom expert advice should be available. Of course, not even a psychiatrist could be expected to exclude all future psychotics. Statistics from many countries have shown that during the last war the incidence of major psychoses did not differ significantly from that found in peace-time. If, however, war does not increase the number of psychotic reactions, this does not mean that a schizophrenic, depressive or epileptic illness may not be released by the physical or psychological stress of war in a predisposed individual. A psychiatrist should be available at the beginning of such illnesses to take note of all causative factors so as to supply complete evidence should the question of a pension subsequently arise. Such cases led to much litigation before the German courts after the last war.

Although the symptoms of the major psychoses seen in war do not differ from the usual types met with in psychiatric practice, such patients tend to come under medical care much earlier than they would have done in civil life, because of the strict discipline and the close association with comrades who show little indulgence for personal peculiarities. The self-denial and subordination required in the services lay open slight anomalies which would have remained undetected for a long time had the patient continued his routine work and lived within the environment of his sympathetic family. The early discovery of these patients makes differential diagnosis more difficult, especially from the more psychogenic reactions. On the other hand, it allows modern treatment to be started at a stage when it yields its best results; such treatment includes continuous narcosis, and hypoglycæmic and convulsive therapy.

There are, however, mental anomalies which may remain undiscovered for a long time in members of the forces under war conditions. Schizophrenics remitted after a first attack have been excellent subordinates, thanks to their loss of spontaneity, and even have shown unselfish recklessness in action, thanks to the shallowness of their emotions. Similarly, many high-grade mental defectives make good soldiers for some time on account of their docile subordination and dull gregariousness. Epileptics hiding their affliction have joined the armies of all nations and some have been conspicuous for their bravery through disregard for their own person. Most of these cases pass into the hands of the psychiatrist sooner or later—some not till the end of hostilities, when they claim a pension.

### Minor Psychoses—"War Neuroses"

It is doubtful if the apparent increase of minor psychological disturbances in war-time is a true one, because of the difficulty in assessing their incidence in peace-time. It is however certain that nothing comparable is observed in the standing armies, conscripted or professional, during peace, and that the symptoms of war neuroses are more conspicuous and varied than those of peace-time. Already at the end of 1914 (after the German advance in France had come to a standstill) the establishment of special hospitals for neurotic soldiers was considered advisable in parts of Germany relatively close to the field of military operations in the west. These hospitals were intended primarily for treatment, but at first the results were disappointing. This was partly due to the indecisive attitude of the psychiatrists in charge, to whom the mass influx of neurotics with many pseudo-physical symptoms was an entirely new experience; even among famous neurologists and psychiatrists controversies arose about the nature of "shell shock" when the first cases were observed in 1914. Further, there was no adequate selection of the patients admitted to these treatment hospitals. It was impossible to provide the ideal psychotherapeutic atmosphere for the neurotics when in the same ward were some patients suspected of, or actually suffering from, one of the major psychoses, others having fits, the nature of which had to be cleared up before suitable treatment could be instituted, and cases of tic, tremor, paralysis, deafness, and so on, who required examination by a specialist in order to exclude an organic illness.

The obvious way out was the establishment of *psychiatric clearing centres*, where cases suspected of psychological anomalies were sent from all surgical and medical wards of the district. Diagnostically

simple cases were disposed of forthwith without admission to the clearing centre, while complicated cases were admitted for observation and any necessary examination by appropriate specialists. The centres were, as a rule, within a large teaching hospital of one of the universities. This arrangement proved very satisfactory for all concerned. During the later years of the war, when recruiting extended over the whole population, the centres' psychiatric advice was sought in doubtful cases by recruiting M.O.'s, and on the question of responsibility of soldiers before military courts. The Fourth London General Hospital (Maudsley Hospital) and the Royal Victoria Hospital, Netley, were clearing centres in this country.

The bulk of the patients dealt with at the clearing centre were neurotics, and these were the main problem of war psychiatry. The exact number of casualties of this kind has never been accurately assessed in any country. A rough idea of the number needing special psychotherapeutic treatment may be formed from the fact that, in 1917, five out of every hundred hospital beds had to be reserved for such treatment in my district of south-west Germany, which was abundantly equipped for receiving casualties from the big offensive battles in France. Psychiatric clearing centres and hospitals for psychotic soldiers are not included in this figure. During April, May and June, 1917, taken as a sample, the five psychiatric treatment hospitals of the district discharged 957 patients, a figure from which one may appreciate the range of psychiatric work to be done in a long war.

The frequency of war neuroses as shown by such figures confirms the conclusion I reached from the examination and the histories of my patients, that it is not an illness affecting only unstable or psychopathic personalities. Constitutional mental equipment as an ætiological factor may become entirely negligible when psychological stress, exhaustion or sleepnessness are undermining the moral resistance of the combatant. Constant peril of life in physically adverse circumstances, and tension and anxiety over many weeks, can lead to a breakdown in the form of a psychotic reaction, with confusion and dreamlike repetition of the last fearful situation. These severe anxiety states occurring in the front line are easy to understand, as is the rationale of their treatment—rest, recreation and simple suggestive methods. Their prognosis is generally good, and often they are even fit for return to service in the front line, but this of course depends on the original personality and its mental equipment, and on environmental factors which I shall discuss later. The admirable description of these cases by Captain W. Johnson in the "Official History of the War" can scarcely be surpassed.

### THE CHRONIC TYPE

A second, more chronic type of war neurosis develops in some cases out of an anxiety state or severe nervous exhaustion; more often its origin is rather intricate, and I propose dealing with its causative factors when discussing the problem of treatment. The symptoms are those of "conversion hysteria." The amazing multiformity of hysteria has been explained by the French school on the grounds that hysteria is a simulation of any kind of disease as reflected in the layman's mind. One certainly was reminded of this theory, debatable as it is, when observing the variety of tremors, tics, mono- and para-plegias, torticollis, ocular palsies, aphonia, mutism, deafness, disturbances of sensitivity, and trophic anomalies of the skin in the neurotics of the last war. All kinds of amnesias were found, somnambulism, enuresis, twilight states, and the never-ending sequence of complaints about pain in the head, the back, the chest, and the bowels, the latter often with vomiting or mucous diarrhœa. Some of these symptoms were hysterical super-constructions on relatively harmless physical ailments, such as paresis of an arm after a simple flesh wound without nerve damage, blinking-tic and ptosis after a superficial lesion of the cornea; or a symptom originally founded on a bodily impairment remained as a hysterical one, although the physical condition was restored, such as deafness or vertigo after otitis media, limp and pain in the hip after acute sciatica. The last examples and many similar border-line cases in general medicine and neurology illustrate the diagnostic difficulties the psychiatrist has to tackle in this field.

The tendency already apparent in this description of the symptoms in the chronic form of war neuroses was underlined when one inquired into the origin of the neurosis. Some of its features, such as mutism, palpitations, tremor, nightmares and sensory losses, were fixed remainders of acute anxiety states, while in many others no anxiety state had preceded them. Fainting attacks, for instance, sometimes first appeared when the impending transport to the front line was announced; a spinal deformity dated from the first carrying of the rifle; epidemics of enuresis on a small scale broke out during the rest time of a detachment at the base. Many neurotics were seen who had never been near the fighting line, and their symptoms were identical with those who broke down under severe strain.

### FACTORS IN RECOVERY

The course of the illness and the prospect of recovery were much influenced by the environment. Military fitness was only restored in cases treated immediately behind the front and sent back to their units direct from there. Some German psychiatrists working under such conditions have reported excellent results, similar to those of the British N.Y.D.N. centres in France. The most intractable patients, on the other hand, were those sent to convalescent homes or remote country hospitals in Germany. Hardly any repatriated neurotics ever returned to the fighting line; thus of 435 patients discharged cured from psychiatric treatment hospitals and followed up in September, 1916, only 5 had returned to the forces in action; a few had served in barracks at home, but the great majority had relapsed and proved unfit for any military service.

It is difficult to disprove that this poor result was due to insufficiently "deep" psychological treatment, because of the divergence of opinion even among experts as to what such treatment should be. The result was in fact only unsatisfactory from a military point of view. In nearly all cases the symptoms of the neurosis could be cured, even with the simple methods of which I shall speak, and this cure proved lasting, provided the patient was dismissed from military service and allowed to work outside the danger zone. Thus of the 957 patients discharged from treatment hospitals within three months in 1917, 933 were free from any symptoms on dismissal from the army; only 24 received pensions, and these mostly because of complicating physical ailments. At the time when these figures were compiled the authorities had already agreed that the repatriated neurotic was unfit for any further military service. In one of the treatment hospitals occupation in a munition factory situated close to the hospital had been made part of the routine therapy, and this usually ended with full employment in the factory. In others, a special employment exchange was provided for transferring the patients directly into industries important for the pursuance of the war. Thus relapses through contact with the military milieu were avoided.

Psychiatric treatment hospitals were usually placed out in the country distant from the big cities and from hospital centres for the wounded and physically ill. Smaller private mental hospitals, convalescent homes and hotels were taken over by the authorities for this purpose. The most efficient size was up to 200 beds.

The exact form of treatment differed considerably in different hospitals. Its decisive factor everywhere was more or less mild suggestion, combined with a greater or smaller degree of analysis of the individual case, according to the personality and theoretical inclinations of the physician in charge. A therapeutic atmosphere was of the greatest importance, and this was often obtained with the help of a matron or nurse blessed with an inborn psychological instinct, while an over-critical or sceptical attitude on the part of the psychiatrist proved detrimental to it. In some places the atmosphere could not be retained, especially in the later years of the war, without a high-handed discipline which led to much resentment; cures were obtained with a combination of forced drill and electric shocks, one of the rather precarious achievements in war psychiatry. The reputation of some of the hospitals vacillated between miraculous places like Lourdes and correction houses for military coercion. I was never convinced that the results of harsher methods differed from those of cunning persuasion and education under mild pressure, methods which experienced psychiatrists employed during the whole war with apparently equal success. In some hospitals a few days' isolation in a dark room, under a mild sedative, was found helpful. All methods proved salutary if combined with removal from the dangers of the war.

### THE PSYCHOLOGY OF WAR NEUROSIS

It is tempting to reproach the psychiatrist for providing in war neurosis just another label for human weakness, lack of social responsibility and malingering. But modern warfare forces into soldiership men selected only for their physical fitness. There must be many who by their psychological make-up and education are totally unsuitable. Civilisation has reduced to a minimum the situations in which man has to face and actively resist danger to life. How few are really trained to stand up against such a danger! The importance of a sufficiently long training promoting morale, esprit de corps, and a high standard of discipline was the first recommendation of the War Office committee's report on shell shock in 1922. To endure terror may be easier as one of a multitude, but the presence of so many others ready to take one's place relaxes the sense of personal responsibility.

The employment of the potential neurotic as a soldier can be defended by figures from authoritative sources communicated during a private discussion on war neurosis in London a few years ago. The figures compare the effective service of a sample of 5000 neurotics taken from a ten times greater total with 5000 soldiers who were slightly wounded. The latters' effective service up to the time of being wounded, excluding the time in hospital, was 33·2 months, against 32·8 months previous service of the neurotics. The figures for service overseas were 17·8 against 19·6 months, the neurotics actually being superior. Although one has to allow for the fact that the wounded were sent home earlier because of their wounds, these figures are surprising. They are a warning not to put too much emphasis on the elimination of the potential neurotic. Every psychiatrist knows of young men who seemed emotionally unstable but who never became war casualties and were even stabilised under the strain of war service.

## Cerebral Injuries and their Sequelæ

In considering cerebral war injuries one realises how useful it would be to adopt the American concept of neuropsychiatry. This is not the place to discuss the relative competence of neurologist and psychiatrist in traumatic cases, but however competent the neurologist may feel in this field there can be little doubt that even in the most circumscribed lesions after head injury psychological symptoms are present, and from the practical point of view they often play a greater rôle than the focal defect.

The frequency of head injuries in modern warfare is well known, and their importance as causes of death or severe disablement can scarcely be overestimated. One may expect that the progress of neurosurgery since the last war will save life and reduce invalidism to some extent. For the latter purpose, the psychiatrist's coöperation is indispensable, beginning when the surgeon's work is completed, or more exactly during the post-operative treatment. By the end of the last war 21 special units for soldiers injured in the head were established in Germany and Austria. Most of these were wards or departments of general, neurological, or psychiatric hospitals; a few were separate institutes which existed for years after the war. Establishing such a unit depended, of course, as much on the number of specialist physicians available as on the growing number of patients.

### TYPES OF CASE TREATED

In surveying the different conditions treated in the special unit, cerebral concussion may be mentioned first. As in concussion after industrial or road accidents these patients often appear to be neurotics. Differential diagnosis between the psychogenic and the organic elements in the clinical picture is more difficult owing to the soldiers' supposed or actual liability to neurotic reactions. The tendency of neurologists and psychiatrists alike to overrate neurotic symptoms in post-traumatic patients has lately been demonstrated by Gruenthal. He published the cerebral post-mortem findings in 17 patients diagnosed as "compensation neurosis," all of whom showed gross cortical damage. Psychoses after non-penetrating head injury are usually of short duration. Their occurrence is increased in war-time, and their sequelæ, such as amnesic states, often last weeks or months. The post-traumatic pseudo-neurotic is not suitable for treatment in association with the ordinary war neurotic, nor is the post-traumatic global or focal defective suitably classified with the usual psychotic.

Patients with traumatic epilepsy form another large group to be treated in the unit. Observation during and after the last war has shown that the whole variety of epileptic symptoms may occur after non-penetrating and penetrating head injury—major fits, absences, twilight states, cataplexy, fluctuations of mood, fugues, transient and permanent changes of personality, and intellectual deterioration.

In some cases of penetrating wounds of the skull, a circumscribed paralysis or a partial sensory loss is the only remaining sign, but adaptation of the brain-injured patient to this relatively small impairment may be strikingly slow and may succeed only under special care and training. Other patients seem to adapt themselves unexpectedly quickly, and are unwilling even to wait for the closing of their wounds, obviously underrating in an abnormal way the severity of their disturbances. This is a well-known symptom of the vulnerable lower part of the frontal lobe and needs experienced psychological handling. Physical defects from multiple splinters all over the body are often

found in combination with traumatic epilepsy caused by a fragment penetrating the skull, or in combination with a more focal symptom of the alpha-privativum type—asphasia, alexia, agraphia, apraxia, agnosia, and so on.

PRINCIPLES OF TREATMENT

Analysis and treatment of these focal symptoms are the most specialised task of the unit. In peace-time practice, aphasias and the like are sometimes symptoms of a brain tumour; they often arise after vascular cerebral accidents in middle-aged or elderly people. The medical problem is very different when the corresponding part of the brain has been destroyed by a projectile in a young soldier. Although the localisation of the symptoms is the same in principle, the possibility of recovering a lost function and the speed of recovery are much greater, as is the readiness with which the lost function is replaced by another which has remained unaffected. This opens up quite new ways of therapeutic procedure.

Grown-up people with cerebral lesions but undamaged peripheral organs have to be taught how to speak, to read, or to write. They may have to relearn to understand sentences, or to do simple sums or every-day tasks, like dressing and undressing. Some patients show great stupidity or a striking loss of spontaneity which careful examination shows to be the result of focal defect. By substitution or by retraining what remains the general faculties seem to be more or less completely restored, and the whole mental life of the patient appears normal. Patients with injured brains cannot be taught by the methods used in children, but special educational methods have been developed. Under medical direction teachers from schools for backward children or for the deaf and dumb did excellent work of this kind during the last war. Vocational guidance and transfer into a suitable occupation form another important part of the work of the unit. It should be provided with workshops giving training in suitable trades, and other facilities of occupational therapy. Invalids with brain injury need considerable care after their discharge and return to ordinary life, and most of the German units employed social workers for this purpose; they thus centralised all sources of information relating to pensions, and providing expert aftercare. One prominent unit in South Germany was still in existence a few years ago doing aftercare among these ex-service cases, and also making use of its experience in traumatic and other cerebral lesions among the civil population.

In conclusion, I must emphasise how much the work on soldiers with head injuries has contributed to the solution of the problems of neuropsychiatry. Henry Head's classical book on aphasia in this country and the publications of Isserlin, Goldstein and Kleist in Germany are proof that science can be constructive even in the midst of destruction.

### Summary

In war-time psychiatry can be of service in the following ways:—

(1) Recruiting medical officers and medical officers in charge of detachments in training should be able to consult a psychiatrist in all doubtful cases, in order to eliminate potential psychotics or neurotics at the beginning.

(2) Psychiatric advice should be available in all base hospitals abroad and in all hospitals at home.

(3) For both these purposes psychiatric clearing centres should be established in connexion with each group of hospitals. The duties of these centres should be confined to diagnosis and the proper distribution of patients. In addition to an outpatient clinic, each should have a number of beds for observation of difficult cases.

(4) Acute war neuroses originating in the fighting lines should be treated in treatment stations close behind the front, and not sent home. The work of the N.Y.D.N. centres in France during the last war can still be considered perfect from the point of view of psychiatry today.

(5) Repatriated war neurotics or neurotic casualties occurring at home should proceed via a clearing centre for treatment in special psychiatric hospitals. Their treatment will be facilitated and shortened if, after cure, they are transferred into industrial war-work, and no attempt is made to return them to military duty.

(6) After surgical treatment patients with non-penetrating or penetrating head wounds should be collected in special units for cerebral injuries, in which all psychological and educational facilities should be provided, and which should deal with aftercare.

(7) The importance of these psychiatric services in maintaining the morale of the fighting forces during the war and saving pensions after the war is sufficient reason why the authorities should try to avoid any waste of trained psychiatric specialists.

## MEDICINE AND THE LAW

### "Guilty but Insane"

In a letter printed on another page Dr. Davie usefully challenges a too loosely worded phrase lately used in these notes in criticism of the verdict "guilty but insane." Both "guilty" and "insane" are dangerous expressions. A motorist is sometimes described as "guilty" of negligence in some civil proceedings where no criminal liability is suggested at all. "Insanity" means very different things to the alienist and the judge at assizes. The phrase to which Dr. Davie took exception was written merely to submit that a person found guilty of an offence according to law, and therefore criminally responsible for his actions, could not simultaneously be found insane according to law in the sense of being criminally irresponsible; to be criminally irresponsible is to be "not guilty." The Atkin Committee on Insanity and Crime put this point clearly. The verdict of "guilty but insane" (or the more elaborate "guilty of the act but insane at the time") it declared to be illogical. An accused cannot be "guilty" of a physical act which is not in itself an offence. The word "guilty" in criminal trials should connote only criminality, the commission of a crime—the very thing which, on the finding as to the accused's state of mind, is negatived. It is a logical principle, said the committee, that where insanity is such as to produce irresponsibility the accused is entitled to a verdict of acquittal of crime. The committee recommended a special verdict in the following form "that the accused did the act (or made the omission) charged, but is not guilty on the ground that he was insane so as not to be responsible according to law at the time."

The historical origin of the unfortunate verdict "guilty but insane," alluded to by Dr. Davie, can perhaps bear to be told once more. Before 1800, if an accused person was found insane so as to be irresponsible, he was simply acquitted and no further order was made concerning him. The Criminal

Lunatics Act of that year enacted that, if evidence of insanity was given and the accused was acquitted, the jury must find a special verdict whether he was insane at the time of committing the act and whether he was acquitted on the ground of insanity. If they so found, then (although the jury was not asked to make a direct finding that he had committed the act) he was to be ordered to be detained during His Majesty's pleasure. In 1882 there occurred the attempt upon Queen Victoria's life by Roderick Maclean who fired a loaded pistol at her. Indicted for high treason he was found "not guilty but insane" and was sent to an asylum during the sovereign's pleasure. Lytton Strachey, in his biography of Victoria, represents the Queen as having been greatly annoyed. What did the jury mean (she is supposed to have asked) by saying that Maclean was not guilty when she had herself seen him fire the pistol; if that was the law, the law must be altered. Reference to the official volumes of the Queen's letters does not quite bear out this version. She was undoubtedly annoyed, but her diary does not suggest that she saw the pistol fired. She seems to have believed that Maclean knew perfectly well what he was doing and perhaps was, as her husband had said of another man who similarly threatened her, not mad at all but a "thorough scamp." There is evidence that this was the popular view. The Queen was anxious that the public should not think that Maclean went scot free because "not guilty"; she wanted persons of weak intellect, who might be tempted to imitate him, to know that he was probably undergoing the equivalent of a life sentence. Gladstone's diplomatic letters to Victoria show the position. Eventually he urges on the legal authorities "that a change should be made in the form of verdict passed upon Maclean to obviate the risk of its producing dangerous misapprehensions in morbid minds and the consequences which in such minds are apt to be engendered."

The result was the Act of 1883 whereby in such cases the jury was to return a "special verdict that the accused was guilty of the act or omission charged but was insane as aforesaid" [i.e. insane so as not to be responsible according to law for his actions at the time] "at the time when he did the act or made the omission." Hence arose the slovenly and illogical abbreviation "guilty but insane," which it will need fresh legislation to abolish.

### Action against Mental Home

In a Dublin action last month Mrs. Murray, who had been a patient in the Verville private asylum at Clontarf, unsuccessfully sued Dr. Patrick D. Sullivan, its proprietor, for damages for wrongful detention and negligence. The allegation of negligence was a complaint that, owing to Dr. Sullivan's want of care and supervision, she had been beaten by another patient and had suffered injury. At the close of her case the judge dismissed the claim for wrongful detention. Mrs. Murray had been received at the home under an order of the Chief Justice directing that she be removed to his care pending an inquiry concerning her alleged lunacy; she had been legally, and not illegally, detained. On the issue of assault Dr. Sullivan and the matron of the home gave evidence that they had never had any report or complaint of Mrs. Murray being injured. The official inspector of asylums gave evidence that the Verville asylum was properly conducted with an adequate staff. The jury found that Mrs. Murray had been assaulted by a patient, but that there was no negligence on the part of Dr. Sullivan or his staff. Judgment was given for the defendant with costs.

### Rejuvenation Treatment

THE Court of Appeal has refused to interfere with the decision in Shallard *v.* Arline where the plaintiff had successfully claimed damages for fraud, beach of contract and negligence in connexion with rejuvenation treatment.[1] Mr. Justice Cassels awarded Mrs. Shallard £788 4*s.* 10*d.* damages against Miss Arline, who was associated with the National Health Clinic in Knightsbridge, and against Mr. Carl Gustafson who could not be served with a writ because he could not be found. Miss Arline denied the harmful effects of the treatment, denied that she was a partner with Gustafson or that she acted jointly with him, and insisted that she herself had undertaken no responsibility for the success of the Gustafson rejuvenation method. Mr. Justice Cassels preferred the plaintiff's story in a judgment which the Court of Appeal has now confirmed. The Master of the Rolls said he could not differ from the trial judge.

## AUSTRALIA

(FROM OUR OWN CORRESPONDENT)

#### BIOCHEMISTRY OF BLOOD STORAGE

THE biochemical changes which take place in human blood during storage have been investigated by Miss Marjorie Bick, working at the Walter & Eliza Hall Institute, Melbourne.[2] She has determined, during various stages of storage, the content of glucose, urea, creatinine, non-protein nitrogen, reduced glutathione, and uric acid in whole blood and the ionic phosphate content of the plasma. She found it possible to keep blood for 14–17 days at 0° C. before any sign of hæmolysis was observed. Numerous biochemical changes, however, occur before the onset of hæmolysis. The glucose content invariably decreases almost to zero. Creatine and non-protein nitrogen both increase 35–36 per cent. Urea, uric acid, and reduced glutathione also rise and there is a large increase in the inorganic phosphate content of the plasma. Hæmolysis of the erythrocytes may be delayed only for a short period by the artificial maintenance of a high concentration of glucose. The two factors of greatest significance associated with hæmolysis appear to be the increase of non-protein nitrogen of the blood, and the rise in ionic phosphate content of the plasma. Hæmolysis generally takes place when the non-protein nitrogen reaches a concentration of 55–60 mg. per 100 c.cm. blood. Cells washed free from plasma with buffered saline, with or without the addition of glucose, hæmolyse much more readily than erythrocytes suspended in their own plasma, and the non-protein nitrogen increase is concurrently larger and more rapid. When, however, cells are washed and stored in buffered saline containing 8 per cent. sucrose their stability is much increased and the changes in the concentrations of the nitrogenous constituents are slower. As in Miss Bick's experiment the sucrose was dissolved in saline the erythrocytes were not agglutinated to any extent, so that any effect due to mechanical aggregation of the erythrocytes appears to be excluded. It appears that the biochemical changes found may be attributed to the erythrocytes, but the essential nature of the process is unknown.

#### PRACTITIONERS IN NEW SOUTH WALES

The New South Wales Medical Practitioners Act 1938–39 has brought medical legislation more into line

1. See *Lancet*, July 22, 1939, p. 215.
2. Bick, M., *Aust. J. exper. Biol. med. Sci.* September, 1939.

with the law in other countries, but the statutory recognition of the right of unqualified practitioners to practise medicine and surgery can be regarded only as a most undesirable, retrograde step. The act itself makes it appear that the government is particularly desirous of protecting people from inadequately trained medical practitioners. Medical students are now compelled, at the end of five years' intensive study at a university, to spend at least a year as resident medical officer at a hospital before they can practise medicine or perform surgical operations; foreign doctors, whatever their previous qualifications, are required in addition either to have passed the fourth, fifth and final degree examinations at the University of Sydney, after attending the prescribed courses of instruction, or to have held a certificate of registration for post-graduate teaching or research work for three years or more. Provision is made, however, for the regional registration of foreign doctors in areas not adequately provided with medical services, on condition that the applicant was entitled to registration in his own country, and has satisfied the board that he is capable of providing medical and surgical attention for the inhabitants of the proclaimed area. No unregistered person is allowed to hold any appointment either as a medical officer in a hospital or as a medical officer of health, and the penalties for posing as a medical practitioner are severe.

Such are the provisions of the act. The regulations under the act, however, change the whole aspect of the situation. Advertising by registered persons is severely restricted, but advertising by unregistered persons is allowed with surprising leniency. Any unregistered person may advertise that he is "entitled, qualified, able or willing to practise medicine or surgery in any of its branches," and this with perhaps no training at all. He may not in his advertisement include any reference to cancer, tuberculosis, epilepsy, diabetes, or venereal disease; but outside those conditions is a large field in which he can do a great deal of damage. Moreover, he is allowed to "advertise by spoken words, whether directly or through the medium of any apparatus for the reproduction of sound." It seems extraordinary that after requiring medical graduates to undergo an intensive course of study extending over several years, such latitude should be extended to irregular practitioners. Surely it is only encouraging quackery and charlatanism to give legal authorisation to practise to persons possessing no recognised qualifications.

### MEDICAL SCHOOL FOR QUEENSLAND

The official opening of the new medical school of the University of Queensland on Aug. 11 marks the final achievement in a campaign launched more than twenty-five years ago for the provision of facilities for medical education in this state. The first proposals in 1913 were interrupted by the outbreak of war. In 1922 arrangements were made for anatomical demonstrations to be given to certain of the dental students at the university. From this small beginning there slowly grew the skeleton structure of a medical course, marking the success of the untiring efforts of a small but determined group of men, which culminated in the inauguration of a faculty of medicine in October 1936. The state government decided to provide buildings worthy of the new venture and the new school is a magnificent tribute to their recognition of its scope and importance.

### COMMUNITY MEDICAL PLAN AT CANBERRA

The City of Canberra, built expressly for the purpose of accommodating the Commonwealth government and its branches, now boasts a population of over 7000, and has provided a useful experimental area for all sorts of modern ideas and practices. Now Canberra has again established a precedent, this time regarding medico-social problems. Although there is already in existence a government controlled compulsory hospital-benefit scheme, the city's medical services have been revolutionised by the introduction of a community plan on a voluntary basis. Five resident doctors are conducting the scheme, which will be open to all residents whose salary does not exceed £520 per annum, and their dependants. Contributions are planned on a sliding scale with a maximum of three guineas a year for people earning £520, and six guineas for those with dependants. This will cover unlimited medical benefits during illness, a complete medical examination every year, a complete obstetrical service, assistance at operations, and medical attendance at doctors' surgeries or in the homes of contributors between 8 A.M. and 8 P.M. on week days and until 1 P.M. on Saturdays. Additional fees may be charged for travelling beyond a four-mile limit and for urgent attention outside specified hours.

## IRELAND

(FROM OUR OWN CORRESPONDENT)

### A CRITICISM OF MEDICAL CERTIFICATION

THE Bishop of Clonfert, who is chairman of the National Health Insurance Society, has severely criticised the way in which the medical certification of incapability for work is carried out. Dr. Dignan was commenting on the actuarial report on the financial working of the new unified society during its first three years. It appeared that the society had not been able to meet in all respects the actuarial requirements of the acts by which national health insurance is governed. The deficiency on the women's side had increased considerably after the union of the societies. The expenditure on disablement benefit was much higher in proportion than in Great Britain, and was, in fact, one-third higher than that on sickness benefit, whereas in Great Britain disablement benefit costs only half as much as sickness benefit. The Bishop believes that this contrast does not represent a real difference between the two countries as regards the incidence of sickness and disablement. In his opinion members in Ireland remain too long on both benefits, but particularly on disablement benefit. He blames two factors—fraudulent and illegal claims made by members and lax certification by doctors. He made it clear that he was not bringing a charge against the medical profession as a whole, but he asserted that very many doctors were lax. He added that much of the fault of lax certification lay not with the doctors, but in the fact that in Ireland certification was not associated with medical treatment, there being no system of medical treatment under the Insurance Acts in Ireland. Dr. Dignan complained also of the small number of medical referees employed, and pointed out that with so small a number long delays were unavoidable. Some 34,000 cases are referred by the society each month, and there are only four referees to deal with them.

The current number of the *Journal of the Irish Free State Medical Union*, commenting on the views of the chairman, admits that there is some lax certification by medical certifiers but does not think that it is adequate to account for the heavy expenditure on disablement benefit. It adds that, whether the chairman's criticism of medical certifiers is exaggerated

or not, it is impossible to meet it so long as careless certification goes on. The medical union has frequently stressed to its members the responsibility entailed in the signing of a certificate. It is the view of the profession, as it is of Dr. Dignan, that until there is a system of medical attendance in connexion with national health insurance medical certification will not be satisfactory.

# PUBLIC HEALTH

## EPIDEMIC PNEUMONIA IN A SETTING OF CLINICAL INFLUENZA

### THE SCUNTHORPE OUTBREAK IN 1938

By W. Hartston, M.D. Lond., M.R.C.P., D.P.H.
MEDICAL OFFICER OF HEALTH TO THE BOROUGH OF SCUNTHORPE

Various epidemiologists, notably the late Sir William Hamer and the late F. G. Crookshank, held that epidemic influenza was but an item, a very important item, in a coördinated series of events. In the Ministry of Health's report on the pandemic influenza of 1918–19 attention was directed to severe local outbreaks of pneumonia, such as those at Northallerton in 1887 and at Middlesbrough in 1888, which seemed to fit in with Hamer's doctrine and perhaps formed part of what he called the "setting" of an influenza period. An extensive epidemic of pneumonia preceded by an outbreak of influenza was recorded by Smillie, Warnock, and White (1938), affecting 100 cases in an institution of 3000 persons and due to a type—I pneumococcus. Even those not prepared to go so far as Hamer would agree that unexpected outbreaks of respiratory epidemic disease always deserve notice. They may prove to be pointers to some important change. For these reasons a brief account of an outbreak in the borough of Scunthorpe should be of interest.

The official returns show a remarkable increase in the numbers of notifications of primary and influenzal pneumonia in England and Wales in the third week of April, 1938. In the week ending April 23, 1938, the number of notifications (1218) was half as big again as in the previous week (856) and 20 per cent. above the normal level for the time of year. Notifications continued at this high level (some 1200 weekly) for almost a month. In the week ending May 21, in which there were 1339 notifications, the excess above the normal figure was as much as 46 per cent. There was, however, no coincident or subsequent increase of deaths ascribed to influenza of any significance; but in some districts, particularly Scunthorpe, the position caused anxiety, for during three months in this small isolated industrial town of 42,000 inhabitants there were notified as many cases of primary and influenzal pneumonia as in the rest of the country among a population of 382,000. Table I summarises the general position in 1938 and in each of the previous eleven years 1927–37. In the two months April and May, 1938, 69 cases of pneumonia were notified, and in June 13—an appreciably larger number than in any of the eleven preceding years, although these included three years (1927, 1929, and 1933) of widespread influenza. In each of these years of influenza and in 1931 and 1932, when the national death-rate from influenza was also rather high, the prevalence of pneumonia in the borough lay in the winter months, January to March. There is nothing comparable in this series of years to the outbreak in the spring of 1938.

Table II shows the weekly incidence of notifications in this epidemic and table III the age-incidence and sex-incidence for the whole outbreak. Some of these rates are based on small numbers. There is an indication of a heavier attack-rate in males than females between the ages of 25 and 60, but, owing to the small absolute numbers, no great weight can be attached to this. There were 10 deaths, giving a case-mortality of 12 per cent.—a moderately severe outbreak. With a duration of thirteen weeks and the population at risk in Scunthorpe 42,000 persons, the equivalent quarterly incidence for the whole population of England and Wales should have been more than 83,000 cases. The expected number for that period was 13,058 and the actual number 13,766.

### CLINICAL PICTURE

The "*influenza*" *cases*—i.e., without pneumonia—developed chiefly in adults. There was no great

TABLE I—MONTHLY INCIDENCE OF PNEUMONIA NOTIFICATIONS IN THE BOROUGH OF SCUNTHORPE

| Year | Jan. | Feb. | Mar. | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec. | Total for year | R.G. estimated mid-year population | Deaths from all causes | Deaths from "influenza" |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1927 | 2 | 18 | 20 | 8 | 6 | 7 | 5 | 4 | — | 10 | 1 | 2 | 83 | 33,050 | 321 | 19 |
| 1928 | 1 | 1 | 1 | 3 | 2 | 1 | 1 | 1 | 1 | 2 | 1 | 3 | 18 | 31,660 | 238 | 6 |
| 1929 | 5 | 6 | 24 | 3 | 4 | 1 | 8 | 5 | 1 | 3 | 5 | 4 | 69 | 31,880 | 350 | 44 |
| 1930 | 5 | 8 | 6 | 9 | 9 | 8 | 6 | 2 | 2 | 1 | 7 | 6 | 69 | 31,880 | 327 | 10 |
| 1931 | — | 15 | 20 | 7 | 6 | 11 | 4 | 3 | 3 | 3 | 2 | 2 | 76 | 33,990* | 349 | 26 |
| 1932 | 14 | 14 | 6 | 5 | 6 | 3 | 1 | — | 2 | 5 | 4 | 3 | 63 | 34,190 | 325 | 15 |
| 1933 | 8 | 17 | 7 | 9 | 5 | 3 | 2 | 3 | 2 | 3 | 2 | 5 | 66 | 34,590 | 359 | 20 |
| 1934 | 7 | 7 | 1 | 4 | 3 | — | — | — | 6 | 1 | — | 1 | 30 | 35,710 | 320 | 3 |
| 1935 | 3 | 2 | 2 | 9 | 1 | 3 | — | 2 | 2 | 3 | 1 | 3 | 31 | 37,170 | 340 | 5 |
| 1936 | 3 | 5 | 4 | 3 | 4 | 3 | 1 | 1 | — | 3 | 2 | 2 | 31 | 38,740 | 360 | 10 |
| 1937 | 15 | 8 | 3 | 1 | 1 | 1 | 6 | 2 | 3 | 2 | 4 | 10 | 56 | 40,270 | 394 | 19 |
| 1938 | 6 | 4 | 6 | 21 | 48 | 13 | 10 | 2 | 5 | 10 | 8 | 8 | 141 | 42,000 | 404 | 22 |

* Census figure.

TABLE II—WEEKLY INCIDENCE OF NOTIFICATIONS OF "PRIMARY AND INFLUENZAL" PNEUMONIA IN THE SCUNTHORPE OUTBREAK

| 1938: Week ending | Notifications | 1938: Week ending | Notifications |
|---|---|---|---|
| April 2 | 2 | May 28 | 6 |
| „ 9 | 2 | June 4 | 7 |
| „ 16 | 7 | „ 11 | 2 |
| „ 23 | 10 | „ 18 | 3 |
| „ 30 | 15 | „ 25 | 1 |
| May 7 | 14 | | |
| „ 14 | 7 | | |
| „ 21 | 7 | Total | 83 |

increase in school absenteeism during the period of the epidemic except among the school teachers. The condition appeared to be highly contagious, many households producing multiple cases. Occasionally an infected household contained one member or more with pneumonia while others had uncomplicated "influenza." In a maternity home employing 19 nurses and 7 maids, the number of staff affected by "influenza" was 9 nurses and 1 maid, in the following order:—

April 21 .. .. 3 cases
„ 23 .. .. 1 case
„ 24 .. .. 3 cases
April 25 .. .. 2 cases
„ 28 .. .. 1 case

The last case to occur was a relief nurse brought in from outside to nurse sick members of the staff. She fell ill with "influenza" on the third day after entering the institution. This and other contact cases pointed to an incubation period of three days.

The onset was sudden, with shivering, generalised aching, cough, hoarseness, and blood-stained mucous sputum. One doctor described these cases as "severe acute bronchitis with blood-stained sputum." Some

TABLE III—SCUNTHORPE PNEUMONIA-RATES (1938)
(Based on R.G.'s population-figure for 1937)

| Age-group | MALES | | | | FEMALES | | | |
|---|---|---|---|---|---|---|---|---|
| | Cases | Deaths | Estimated population | Pneumonia-rate per 10,000 | Cases | Deaths | Estimated population | Pneumonia-rate per 10,000 |
| 0–5 | 2 | 0 | 1829 | 10·9 | 3 | 1 | 1797 | 16·7 |
| 5–15 | 7 | 0 | 3985 | 17·6 | 7 | 0 | 4026 | 17·4 |
| 15–25 | 10 | 1 | 3696 | 27·1 | 9 | 2 | 3505 | 25·7 |
| 25–40 | 14 | 1 | 5020 | 27·9 | 6 | 0 | 4792 | 12·5 |
| 40–60 | 13 | 3 | 4592 | 28·3 | 6 | 1 | 4183 | 14·3 |
| 60 | 3 | 0 | 1434 | 20·9 | 3 | 1 | 1411 | 21·3 |
| Total | 49 | 5 | 20,556 | 23·8 | 34 | 5 | 19,714 | 17·2 |

cases showed loss of taste sensibility, which persisted up to three weeks. In the early stages these patients felt ill and looked ill. Recovery usually took place after six to fourteen days.

The "*pneumonia*" *cases* usually showed signs of pulmonary consolidation three to eight days after premonitory "influenzal" symptoms. The consolidation was usually lobar, most commonly in one lower lobe, sometimes bilateral, and often accompanied by a pleural effusion of clear fluid. Unilateral thoracic pain commonly heralded the onset of consolidation, and blood-stained sputum was common. Bacteriological examination of the sputum usually showed pneumococci, sometimes accompanied by *Streptococcus viridans* or *Hæmophilus influenzæ* (Pfeiffer). Temperature was high, about 102° F., but fell gradually to normal by about the eighth day. Most patients were fully recovered in three weeks. In fatal cases death usually took place within a week of onset. One patient developed pneumonia after nursing a child with uncomplicated "influenza."

TABLE IV—SICKNESS IN SWINE AT SCUNTHORPE (1938)

| Week ending Saturday | Pigs ill | Pigs died | Total of pigs in stock | Humans on farm* affected by "flu" |
|---|---|---|---|---|
| April 9 | — | — | 1241 | — |
| „ 16 | 1 | — | 1328 | — |
| „ 23 | — | — | 1301 | 1 |
| „ 30 | — | — | 1301 | 1 |
| May 7 | 3 | 1 | 1158 | 2 |
| „ 14 | 5 | 2 | 1021 | 1 |
| „ 21 | 4 | 2 | 1278 | 1 |
| „ 28 | 2 | — | 1380 | 2 |
| June 4 | 1 | 1 | 1263 | 1 |
| „ 11 | — | 1 | 1213 | — |
| „ 18 | 1 | — | 1213 | — |
| „ 25 | — | — | 1213 | — |

* Farm employed 21 men.

## EPIDEMIOLOGY

To get some idea of the association between the pneumonia cases and those of uncomplicated influenza I sent questionnaires to all those patients who had been notified as pneumonia, to learn what other members of the household had been affected by influenza. From the replies I gathered that of 53 unrelated persons suffering from "primary pneumonia" 10 produced contact families involving 18 cases of "influenza." Returns from four large steel works in the borough employing most of the local adults showed a 25 per cent. increase in the weekly sickness-rate during the weeks of pneumonia incidence. This, in conjunction with the prevailing medical practitioners' diagnosis of "influenza," is taken as strong evidence of the existence of an influenzal background or "setting" to the pneumonia outbreak.

In view of the absence of serological evidence of influenza virus I thought that we might here be dealing with a virus of lower or different antigenic value. I made inquiries of local pig farmers to discover if there had been a concurrent epizootic of swine influenza. Only one farmer could produce accurate records, and these do suggest a coincident pig morbidity (table IV).

## VIRUS INFLUENZA

Stuart-Harris et al. (1938) give good reasons for distinguishing between influenza due to a virus infection and clinically similar diseases which they suggest should be called "acute upper respiratory catarrh." Elkeles (1934) has shown by experimental work on the influenzas of swine and man that the virus of epidemic human disease is transmissible to pigs and vice versa, although the two viruses are serologically distinct. Also, in each case, but more so in swine, the virus disease is clinically much more severe if *H. influenzæ* accompanies the infecting filtrable virus. Shope (1936) concluded that in human

influenza any one of many pathogenic micro-organisms can act in combination with influenza virus to cause a more severe illness than would be produced by virus alone. This may explain the state of affairs in Scunthorpe, where many people were ill with an infectious condition clinically diagnosed as "influenza," whereas only a proportion of them developed pneumonia.

In general one might associate virus infection with dispersiveness, but the connexion may not be inevitable. It therefore seemed desirable to ascertain whether in this outbreak virus could be implicated. Sir Patrick Laidlaw and Dr. Andrewes kindly undertook the laboratory investigation by virus-neutralisation tests against mice. I supplied them with ten sera from 2 convalescent cases of influenzal pneumonia, 4 convalescent cases of uncomplicated "influenza," and 4 controls from Scunthorpe residents who had no recent history or influenzal infection. The antibody content of all sera was found to be at such low levels that no serological evidence was obtained that influenza virus had been involved. In other words, this outbreak cannot be regarded as one of epidemic influenza, if, as suggested by Stuart-Harris et al. (1938), that name should only be used when the part played by virus has been demonstrated serologically in convalescents or by the infectivity to ferrets or mice of garglings or nasal washings from acute cases.

The cause of this rather striking outbreak remains unsolved. The increase of notifications of pneumonia in the country as a whole and some newspaper reports suggest that April–June, 1938, was epidemiologically abnormal. Perhaps the late Sir William Hamer would have regarded it as part of the setting of a general influenza. We are left to contemplate the possibility of an "influenza" due to a virus which does not produce antibodies to Laidlaw's virus and does not infect ferrets and mice but which, in combination with ordinary pathogenic bronchial organisms, produces a high pneumonia morbidity.

SUMMARY

A localised outbreak of acute upper respiratory catarrh, serologically distinct from ferret-pathogenic virus influenza and with unusually high incidence of severe pneumonia, in the spring of 1938 in the borough of Scunthorpe is described, and its epidemiological significance is discussed.

My thanks are due to Sir Patrick Laidlaw, F.R.S., for testing sera and to Prof. Major Greenwood for his assistance in the preparation of this paper. To the medical practitioners of Scunthorpe I owe thanks for their coöperation in gathering clinical data.

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## Typhoid Carriers

OUR Ministry of Health has never separated enteric fevers caused by *Eberthella typhi* from those due to *Salmonella paratyphi*; the localities of the outbreaks of 1938 are not mentioned in the Chief Medical Officer's report and we are left to guess the nature of the infection. There is reason to believe that the first outbreak mentioned "in a rural area" (p. 24) with 29 primary and 13 secondary cases, and 8 deaths, was true typhoid, as was also the outbreak in Wales. Later in the report appears a special chapter on the enteric group of fevers which is reprinted practically unaltered as memo 225 Med. (price 2*d.*). Since the typhoids were not specially prevalent in 1938 an explanation for the prominence thus given to them is to be found in the special risks of infection during war conditions and evacuation and (perhaps) the startling cost in compensation paid by Croydon as one result of the outbreak of the previous year. The memo gives the impression that the ministry is not happy about the carrier problem, in view of the heavy toll of recent outbreaks traced definitely to this source. Until 1927 (S.R. & O. no. 1004) the public-health department had no legal power to deal with carriers, for though the Public Health Act of 1875 made it an offence for a person to expose himself "while suffering from any dangerous infectious disorder," the word "suffering" excludes carriers. In 1875 the parasitic nature of infections was not admitted. The Public Health Act of 1936 leaves the law on this subject unchanged, but the order of 1927 gives powers, obtainable only with difficulty, to prohibit the employment of carriers of enteric fever or dysentery from being employed in catering trades. The provision is however hedged about with so many complications as to limit its practical value.

Carriers of both eberthella and salmonella can directly infect foodstuffs; they do so frequently and are the cause of all outbreaks of the former spread by foodstuff, but not all of the latter. The carrier of eberthella has moreover a graver danger, doubtfully possessed by the carrier of salmonella, that of infecting the water-supply. Most major epidemics of typhoid are spread either directly by the water-supply—witness Malton and Croydon—or indirectly through the medium of water, such as occurred in Bournemouth-Poole. Indeed, contamination of drinking water by carriers of eberthella is, and is likely to remain, one of the major risks of mankind in all parts of the world. Control of carriers—apart from permanent incarceration—would not eliminate this risk, for carriers must pass their evacuations somewhere and it is not always their fault if their evacuations get into the drinking water. In the Malton epidemic the spreader was in hospital and his evacuations were emptied into the hospital closet. Malton had been asking for this epidemic for forty years for its water-supply was known to be exposed to contamination throughout this period. The Croydon epidemic might have been prevented by the control of carriers, but also by other safeguards which a legal tribunal held should have been taken. Paratyphoid is doubtfully spread by water, though Houston recorded that after the outbreak in Essex, *S. paratyphi* was recovered from the river Lea.

There should, however, be little danger to a community which is careful of its water-supply from typhoid carriers who would submit to a reasonable amount of supervision and carry out precautions against spreading disease far less onerous than those required from consumptives. The difficulty is to know the carriers. In the memo we are told: "It would hardly be practicable to secure the systematic identification, segregation and treatment of chronic carriers." Segregation should not be necessary, and we could not insist upon treatment for we have none which is reliable. Identification is another matter. Practically all clinical typhoids are treated in institutions which, if they make any claim to be efficient, establish the presence or absence of the carrier-state of the patients before discharge. So the majority of carriers—at all events of eberthella—are actually known to somebody

somewhere, and it should not be impossible for this knowledge to be collected and made available to the public-health service. No such register would be complete, for cases not clinically recognised would be missed and many carriers are intermittent in their discharge of bacilli. Even repeated negative examinations will not always exclude carriers which may subsequently be dangerous, unless they become Widal negative, in which case they cannot be carriers.

During 1938 1322 case of enteric fever were notified of which 163 died, giving a fatality-rate of 12·3. The number of notifications was the second lowest and the fatality-rate the second highest in the past ten years. The majority of cases must therefore have been eberthella, for salmonella is much less fatal. In tropical countries where eberthella is frequent salmonella is rare; in Britain, between the war of 1914–18 and 1936 salmonella was much the more frequent infection, but it appears to have receded of late, while eberthella has risen in incidence.

# GRAINS AND SCRUPLES

*Under this heading appear week by week the unfettered thoughts of doctors in various occupations. Each contributor is responsible for the section for a month; his name can be seen later in the half-yearly index*

## FROM A NORTH-COUNTRY PRACTITIONER

### IV

I HAVE received more kindness, consideration and help from consultants than I can ever remember or repay. As a class they look after their own who have met misfortune with a liberality rarely encountered elsewhere. They are undoubtedly the best-paid part of the profession and as a rule they deserve it. Like the rest of us, however, they are well assorted and have attained their relative eminence by varied paths. The prescribed routine in the case of physicians and surgeons involves years of relative impecuniosity before the stream of success, evidenced by a rather larger house and car, develops into the full river of affluence with its mansion, the inevitable Rolls and a bit of shootin' and fishin'. In the earlier days the faith and goodwill of a G.P. with a good practice is worthy of cultivation. Later this goodwill is of minor importance. The patients arrive whether their practitioner wishes it or not. One exasperated G.P. said he had decided to fine a surgeon £250—his next five surgical cases—because he had failed to turn out for him in the night. At this stage the admonition to beware of the snare of increasing wealth might well be administered, but it would be of no avail. Even when the river is in full spate they are haunted by the spectre of insecurity, fewer patients than usual for a week sets them fidgeting; the thought of how few years lie between them and retirement from the hospital staff spurs them on to greater efforts—and fees. Meanwhile, for lack of time, academic interests suffer and the contributions which they could fruitfully add to medical literature go unwritten. A few, realising the cash value of publication, employ younger men to devil for them and then lend the weight and authority of their names to the end-result. Unfortunately there are also those who in spite of toiling by the prescribed route up the Sacred Way never arrive. It is not surprising, since their work is often of the highest order, that their lot is gall and wormwood.

The specialties often appear to attract a different type. The ranks tend to be swollen by the wide-awake young man who calculates coldly which specialty will produce a maximum income with a minimum of intellectual effort in a minimum time. Thus he will be delivered for ever from the noisome inconveniences of general practice. It is interesting to watch how many of this type achieve their object; interesting too in after years to note that diagnosis is always their weakest point because they never really had time to learn it. A hysterectomy for instance covers a multitude of sins and saves many an exact diagnosis but it never cures a sacro-iliac strain. In addition there are the consultoids—the quacks who once took a medical degree.

* * *

A meeting of practitioners once discussed errors—in diagnosis, treatment, handling of patients, and the other multifarious omissions and commissions which doctors perpetrate. At the end one Scotsman, hitherto silent, explained that he had not as yet been in practice long enough to make any! One felt like the man who remarked when attending a funeral, "The worst of this sort of thing is that there is no reciprocity about it." If the G.P. does not bury his mistakes he has to live with them as a constant reproach, within or without his practice. With the consultant this is not so. Unfortunately when the consultant's error becomes manifest even to the patient the latter will not go back to the same man whose appreciation of error would make him doubly attentive. I have seen many diagnoses given with assurance which time has failed to substantiate. I have been laughed out of court on making a diagnosis of appendicitis because appendicectomy had previously been performed by a reputable surgeon years before. When laparotomy was performed half the appendix was still there. I have seen many a gloomy prognosis falsified and many a cheerful one rapidly followed by death. Much is forgiven a surgeon that would be fatal for a G.P. He who was called to see a gangrene of the foot wrapped up in a flannel legging and took firm hold of it under the impression that it was a hot-water bottle, was readily forgiven what in a practitioner would have been looked upon as careless and inconsiderate. But whether the consultant is good, bad, or indifferent, right or wrong, consultation is always followed by a period of peace for the G.P., so highly does the public rate having had a specialist. Neighbours and friends who were not present when the great man gave his views may not look on things in quite the same light. The consultant emerges from the illustrious void and goes back to it. As one Lancastrian writer put it, "I do not know how the great man from Harley Street would have taken it, had he known that his visit was an intimation acted on by the entire community to abandon all hope."

On many occasions the help and advice of consultants have been invaluable. Often of course one knows that the result of the interview will be Mag. Ox. in one case, and in another the latest product of some foreign drug firm, as evidence of his being thoroughly up-to-date. Actually the consultant body is just as attached to its ruts as any other and often more inclined to see everything through the lens of its own particular interest. A patient—the big business type—suddenly decided that he felt really ill and

something must be done about it immediately. He made appointments to see four consultants that afternoon: a physician known for dealing with abdominal conditions, a neurologist, a purely general physician, and an eminent surgeon. I received letters from them simultaneously next morning. None of them could find anything grossly wrong but the first said the liver was not functioning properly, the neurologist that the whole nervous system was keyed up and a month's holiday was essential, the third suggested a tonic, and the surgeon thought there was sufficient indication for a laparotomy. Then he suddenly remembered a physician who had previously examined him for life insurance. To this physician he explained that he felt really ill but that he wished to take out a life policy for £10,000. So he was examined from top to toe and was told that much as he disliked accepting him he could find no good reason for rejecting him. He forthwith took out his policy and felt a great deal better. Another patient used to instruct his family never to see a consultant without their own doctor being present. Although it would cost more he argued that they would be saved from the consultant's pet foibles, they would get better attention, and they might be saved a tour of investigation. In this he was without doubt right. Some consultants look upon the presence of a G.P., when they already have a patient and his relations to cope with, as an added burden. Others openly welcome him not only as an indication that the patient is a person of substance (this is more often true than not) but also because he can give useful information about the patient, and occasionally about his exiguous circumstances which are valuable in planning appropriate treatment.

* * *

In addition to a knowledge of a specialty a really good consultant requires a breadth of view which will overcome and outweigh the myopia which his specialism entails. I think it was L. A. G. Stong who wrote "A physician needs so much more than a knowledge of disease. His authority must extend and derive from beyond the surgery. That was where so many failed. They were negligible as men. Their interests were narrow, their minds prone to suspicion, their noses kept too close to the grindstone of general or special practice to give them a wider vision. It must be supposed they were forced to specialise so young that they never got any real education at all." The noses of general practitioners are kept so close to the grindstone that perhaps they never will have a chance. Consultants should have more time and leisure and be able to fill it to advantage. If every consultant had some first-hand knowledge of general practice, his field of vision would be increased and the blind spot less in evidence.

Such a course, taken early, would have incalculable effects. It would obviate the hospital resident who makes it so clear that though he has never seen or heard of you before he has no faith whatever in your diagnosis and very little use for any information you may offer. It would give first-hand experience of the utter impossibility of treating certain cases in the surroundings in which they are found. It would enable him to take a worm's-eye view of a situation which later he will only be able to watch from Olympian heights. It might even teach him something of the art of handling patients; it is so often said that a practitioner starts by knowing a good deal of medicine and nothing about patients, and ends by knowing no medicine and an infinite amount about patients. It would show him that a good deal of spadework has been done before the patient reaches his hands. Even in acute abdominal conditions and obvious cases of such conditions as diabetes, the horse has had to be led very carefully to the water. The necessity for an operation or of beginning a life on insulin requires a deal of explanation and persuasion. Many shrink from the thought of a hypodermic injection even with the newest and sharpest of needles. So utterly deficient are some consultants in the art of persuasion that they could never have earned a living in general practice. Such an one was the surgeon of whom a patient said, "I hate to see him at the end of the bed; he has no idea what to say and nor have I."

* * *

If a short period in practice were an integral part of the medical course some hold that there would be fewer G.P.s than ever, on the grounds that it is only economic circumstances and the desire to get married which fill the ranks. Every practitioner is the better for having had good hospital experience but resident hospital posts give a man no idea of what is in store. Hospital residence however should not be too prolonged. Otherwise when the break comes and a man ceases to be waited on hand and foot with regular hours and unlimited medical supplies, it is very hard to be alone, tied, and practising those petty parsimonies which general practice entails. Even more difficult to eradicate is a tendency to look on patients as obedient cases gratefully accepting such treatment as is vouchsafed. Private practice and private patients are a very different kettle of fish.

## INFECTIOUS DISEASE

### IN ENGLAND AND WALES DURING THE WEEK ENDED DEC. 2, 1939

*Notifications.*—The following cases of infectious disease were notified during the week: Smallpox, 0; scarlet fever, 1355; whooping-cough, 1244; diphtheria, 1010; enteric fever, 13; measles, 2206; pneumonia (primary or influenzal), 461; puerperal pyrexia, 157; cerebrospinal fever, 27; poliomyelitis, 17; polio-encephalitis, 1; encephalitis lethargica, 1; dysentery, 50; ophthalmia neonatorum, 75. No case of cholera, plague or typhus fever was notified during the week.

*Deaths.*—In 126 great towns, including London, there were no deaths from smallpox or measles, 1 (0) from enteric fever, 1 (0) from scarlet fever, 5 (2) from whooping-cough, 19 (0) from diphtheria, 36 (4) from diarrhœa and enteritis under 2 years, and 23 (3) from influenza. The figures in parentheses are those for London itself.

Southampton reported the only death from typhoid. Fatal cases of diphtheria were scattered over 15 great towns, Liverpool, Manchester, Bristol and Walsall each reporting 2. Birmingham had 11 deaths from diarrhœa, Newcastle-on-Tyne 3.

MARRIAGE OF THE BLIND.—At a meeting of Leicester city council a few weeks ago a councillor drew attention to a rule of the Leicester Blind Institution which discouraged marriages between blind people. It seems that this institution does discourage blind couples from marrying except on a medical certificate that there will be no children, and as a consequence four or five men or women have been sterilised at their own request. It is thought undesirable that where both parties are blind there should be children, not merely because of the possible transmission of blindness, but because two blind parents will find difficulty in looking after children satisfactorily. In the first place the authorities of the institution made a rule that if two blind people married they would cease to employ them. A couple then produced medical evidence that the woman could not have a child and it was agreed to make an exception in her case. This created a precedent. There is no mention of sterilisation in the rule.

# LETTERS TO THE EDITOR

## MEDICAL SOCIETIES ON ACTIVE SERVICE

SIR,—In times of stationary warfare, and particularly in the winter months, it becomes necessary to invent schemes for the counteraction of boredom and the maintenance of interest and efficiency. For the medical services there can be nothing better for this purpose than the medical society, with all its opportunities for exchange of "shop" and useful information, and with as regular and varied a programme as circumstances may permit. Medical meetings, whether under the auspices of a local society or not, played their part in the last war and are sure to be revived. Such societies may be small or large; they may be based on an army or a corps, or have their centre at a base, or in hospitals and training areas at home. They can combine a social with a scientific purpose and their meetings should not become too formal. In the case of the Expeditionary Force they should be able to draw upon consultants or medical or surgical specialists attached to base hospitals and casualty clearing stations for papers on clinical topics. Talks among ambulance and regimental officers on aspects of their work can be equally valuable if less clinical. Pathologists and medical officers connected with sanitation and the many-sided problems of venereal disease should also have their contributions to make. Directors or assistant directors of medical services may profitably be invited to give instruction and advice on administrative subjects and to recount experience of other campaigns to units mainly composed of civilian doctors.

The educational approach to the venereal-disease problem, as opposed to the mere provision of preventive packets, and how it may best be organised for different types of unit and different ranks inevitably requires free discussion in our younger modern army. The practical and theoretical implications of the surgical methods advocated by Trueta; the known and possible contributions, and also the dangers, of sulphonamide treatment in sepsis, pneumonia, meningococcal meningitis and gonorrhœa; the management of shock and chest-wounds; the old P.U.O. problem—all these should provide food for discussion even before the advent of battle. Few problems call for more careful consideration than that of D.A.H. or soldiers' heart. Many physicians, in retrospect, must feel convinced that there was a wholly unnecessary sick-wastage from this cause in the last war and that physical and infective factors (as opposed to emotional factors) were far too extensively blamed, even by cardiologists of distinction who had not seen cases in their early stages and in their causal environments. A large proportion of all cases could have been reclaimed by simple psychotherapy and physiotherapy, without hospitalisation or invaliding and with a great saving of expense to the country. The soldier is a simple and sensible fellow for the most part, but like the civilian he can either be made into an invalid by a wrong treatment or label, or cured of many of his functional disorders by straightforward explanation and reassurance and short respites from bad conditions. Reminders of the advantages of re-educational camps, instead of hospitals, for all the minor neuroses (a late lesson of the last war) cannot be brought too soon to the notice of the whole medical service.

A lending library at the base and a system of circulation of important journals, manuals and reprints should not be beyond the dreams and the scope of the best organised army medical corps in the world. The keeping of medical notebooks and diaries should everywhere be encouraged. Many of us look back upon our medical and surgical experience of the last war as one of the most vivid and instructive experiences of a life-time. The good comradeship, the complete absence of the competitive evil, the living and working at close quarters of friendly teams, the direction of unanimous effort to the one object of doing the best possible both for the service and for the individual sick or wounded soldier, sailor or airman—all these provide an atmosphere which might with advantage, but does not yet, exist in our less united and less whole-hearted civilian organisations.

With the addition of research teams and base or army schools or instructional courses, the welding and evolution of the military medical machine in time becomes complete and lends its full support and inspiration to the common cause. The particular functions of the medical society are to bind and to leaven the official work, to facilitate exchange of views, and to maintain enthusiasm and the spirit of inquiry essential to all good medical service. We are all confronted with a new phase of postgraduate education and Osler's happy reflections on "The Educational Value of the Medical Society" are as worthy of attention in war-time as in times of peace.

I am, Sir, yours faithfully,

Cambridge. JOHN A. RYLE.

## STORED BLOOD

SIR,—The annotation on stored blood in your issue of Dec. 9 attributes to us opinions which we never expressed and then proceeds to bludgeon them. In our paper on changes in stored blood the week before we made it plain that we wished to indicate the limits within which blood stored in a particular way retained its normal features. Discussing the cellular changes, we said that there slowly came a time when in every particular examined there were gross disturbances in form and function and we inferred that this time was the limit of usefulness of the red blood-cell. We also drew attention to fallacies in the common practice of judging the blood solely on the appearance of the supernatant fluid. This is a fair summary of what we thought was a simple and intelligible record of work. The impression left with your annotator, however, was that we "hold the view that stored blood is likely to be valueless" and that our evidence "does not condemn a well-established practice." In fact, we neither made nor tried to convey a general statement about the value of stored blood or the practice of blood-transfusion.

To say that the increase of fragility of the red cells to hypotonic saline is no real evidence of cell damage is beside the point. A fragile cell may not be "damaged" in so far as its cell membrane is still intact, but if, as we have shown after three weeks of storage, its integrity is shattered by slight trauma it is unlikely to survive both the agitation and heating before transfusion and the strain imposed during the operation. Your annotation dismissed our diminishing erythrocyte-counts with the reminder that a thick film of cells adheres to the walls of the bottle and this may account for the fall. But our counts were performed on blood and not on the supernatant fluid. Each bottle was prepared as for transfusion and an even suspension of cells obtained. It is of course impossible to remove, without violence, all the cells adhering to the glass just as it is impossible to remove

the numerous erythrocytes bound up in the clots of blood a month old. But as these cells are not available for transfusion mention of them is merely a point in favour of our figures. Finally, your annotator informs us that the appearances in dried films may be artifactual. This is so well known that we took special pains to control our films; the scanty artifacts did not deter us, however (and they do not deter most clinical pathologists), from noting rising numbers of abnormal forms in the blood. The changes described are clearly not explicable as artifacts and moreover we showed that they behaved differently from normal erythrocytes.

May we emphasise again the utter confusion which exists in medical opinion as to the time-limit of usefulness of stored blood. Your annotation mentions an instance in which a worker with experience of 400 transfusions thought that fourteen days was much too long. Your annotator is impressed by the growing record of clinical successes and says that there is a large body of clinical evidence that blood stored for a month or more can be used successfully. We have given our reasons for the belief that three weeks is the time-limit for the intact red blood-cell as an oxygen-carrying unit. And until there is carefully controlled evidence that *erythrocytes* older than a month carry on in the body their specific function we shall hesitate to recommend for this purpose blood stored for longer than three weeks. The question is not merely academic and we feel that vague clinical impressions are not the best ground on which to decide a problem when human life may be at stake.

We are, Sir, yours faithfully,

A. MACDONALD,
G. M. STEPHEN.

Aberdeen.

## DETOXICATION OF SULPHONAMIDES

SIR,—The recent memorandum of the War Office on the chemotherapy of war-wound infections contains a long list of possible forms of intolerance to suphonamide drugs, together with suggested means of overcoming or mitigating them. If, in civil practice, these side effects are accepted as largely inevitable, unfortunate but seldom affecting prognosis, they may assume a graver significance in patients already suffering from the shock of war wounds and of subsequent general anæsthesia and surgical operation. A correspondingly greater importance may therefore be attached to methods of making these drugs better tolerated.

In the official list no mention is made of nicotinic acid. Nicotinic acid is specific in the treatment of pellagra, and there are a surprising number of points of similarity between the symptoms of pellagra and those of sulphonamide intolerance. Both may show increased porphyrin in the urine, photosensitisation of the skin, a relative increase in lymphocytes, nausea and vomiting, and mild mental symptoms (confusion, dizziness, loss of memory, depression, headache and insomnia). McGinty [1] and his colleagues, noting some of these points of resemblance, found that in patients undergoing treatment with sulphonamides nicotinic acid brought about a diminished excretion of porphyrin along with the relief of various symptoms of intolerance, notably mental depression. Following the publication of this finding, Pepper et al.[2] tried nicotinic acid in a few pneumonia patients undergoing treatment with M. & B. 693 and reported encouraging results. These authors did not specify for which particular forms of intolerance nicotinic acid was prescribed, but Josephson and Klewan [3] reported that delayed resolution of lung consolidation in pneumonia patients treated with sulphanilamide cleared rapidly under the administration of nicotinic acid.

Liver extract contains a considerable percentage of nicotinic acid, and it is of interest to note that French workers have reported that its administration doubles the minimum lethal dose of M. & B. 693 Soluble in experimental animals, and that clinically liver extracts are extremely useful in reducing the toxicity of sulphonamides.

In other conditions in which porphyrinuria may be found nicotinic acid has been given with some success. In radiation sickness it often brings about prompt cessation of nausea, vomiting, anorexia and headache. In syphilitic patients undergoing arsenotherapy porphyrinuria is not uncommon, and liver extract has been prescribed for this. Scolari [4] reported that nicotinic acid was less effective than liver extract in producing diminished excretion of porphyrin in such cases.

How nicotinic acid acts is uncertain. It appears to be necessary for the normal functioning of the gastro-intestinal tract; and larger quantities may be required in pyrexial and infective conditions. In pellagra its precise action has not been determined, and in sulphonamide intolerance response to nicotinic acid does not seem to have any direct relationship to changes in porphyrin excretion. It is reported that in radiation sickness, even when the excretion of porphyrin seems to be within normal limits, nicotinic acid is effective in overcoming vomiting. It is of interest to note that an increase of porphyrin in the urine is found in animals dosed with sulphanilamide, but not in those given corresponding doses of M. & B. 693.

As sulphanilamide and M. & B. 693 are likely to be given to soldiers suffering from infected war wounds or pneumonia, in a dosage certain in many cases to produce intolerance, it would be well if a large-scale investigation were speedily made of the possible value of nicotinic acid as a detoxicating agent. In moderate dosage nicotinic acid is relatively innocuous, although flushing of the skin, parasthesiæ and perspiration may follow administration of large doses. Individual doses of 50 to 100 mg. or more may safely be given by mouth four or five times a day and, if need be, the drug may be administered intravenously in saline in smaller dosage.

I am, Sir, yours faithfully,

ROBERT FORGAN.

Brentwood, Essex.

## NATURAL HISTORY OF PYLORIC ULCER

SIR,—It was refreshing to read your leading article of Sept. 30 drawing attention to the primary importance of emotional factors in the genesis and therefore in the treatment of peptic ulcer. The dictum common in one's student days that when stocks fall on Wall Street the ulcer rate rises was in danger of being obscured by the modern methods of treating the end-results with alkaline powder, diet, injections and surgical operations. But the history of three recent perforations which have come my way goes to show that it is not wise to confine one's interest to one factor only, even the emotional; these cases show definitely the interplay of several.

CASE 1.—A man of 42. Chronic indigestion for 8 years; typical hunger-pains relieved by eating or alkaline powder. Had not been feeling up to the mark for a few weeks. On Sept. 3, when few of us did not feel disturbed by the air-raid warning which followed immediately on the declaration of war,

1. *J. med. Ass. Georgia*, 1939, **28**, 54.
2. *Amer. J. med. Sci.* July, 1939, p. 22.
3. *Nature*, 1939, **143**, 725.
4. *Gior. ital. derm. sif. Milano*, 1939, **80**, 545.

he was seized with violent epigastric and chest pain and when seen had obviously perforated. A small perforation of a gastric ulcer was found at operation and his recovery was uneventful. There seems little doubt that the exciting factor in this case was emotional.

CASE 2.—A man, aged 49, with a history of long-standing indigestion and hæmatemesis 10 years previously, had been employed since the start of the war on very heavy work in making sandbags. He had felt tired out every evening and one day when in the act of lifting a heavy sandbag he perforated. Operation was performed soon afterwards and he made an uninterrupted recovery. Here overexertion must have been the exciting factor, for he was getting better wages and was less worried over money matters than he had been for some time.

CASE 3.—A man of 55. Indigestion for 21 years (since the last war), kept at bay by careful dieting. He was of an anxious nature and work had been precarious for years, while a young family made existence difficult. Since Sept. 3 he had been on full-time war-work in aeroplane manufacture; though his financial anxiety was materially lessened thereby the distance from home made regular meals impossible and home cooking out of the question. He perforated at work but delayed sending for medical attention and died soon after operation. Here the dietary factor, in spite of the lessening of anxiety and worry, led to disaster.

So in three perforations we have evidence that emotion, fatigue, and relaxation of dietary restrictions may each precipitate perforation.

Some explanation of the psychosomatic connexion between emotional causes and ulcer is offered by another case, a gastric ulcer of years' standing which had a relapse since the opening day of the war when she was in a bus as the air-raid warning went. Panic prevailed and immediately, as she said, her stomach "turned over" in fear; from that moment her gastric pain returned and vomiting recommenced after being absent for about three years. One wonders if it is the people who "feel their emotions in their stomach" who are prone to ulcer, and if it is a local sympathetic nervous effect which predisposes the mucous membrane to ulceration, perhaps by inducing ischæmia, loss of tone or the like.

I am, Sir, yours faithfully,

London, N.7. W. LEES TEMPLETON.

## HEREDITARY FAMILIAL PURPURA SIMPLEX

SIR,—I must thank Dr. Herbert Levy for his letter in your issue of Dec. 9 and for drawing attention to Jürgens's paper. But Jürgens did not describe cases of the same type as mine. There are fundamental differences. He found in three families in central Germany 10 cases (mostly females) who showed skin hæmorrhages without alteration in the number of platelets or in bleeding-time. But he wrote, "The leading symptom for all is skin hæmorrhages which appear spontaneously on pressure (*spontan auf Druck*) or after slight pinches." My paper was based on 25 personally investigated patients with familial spontaneous ecchymoses and at least 21 did not show any bruise after moderate pressure or blows. In fact, they often stated that they were resistant to bruises from severe blows. Even the few who bruised easily did not do so to any great extent.

Jürgens found the "pinch-phenomenon" and the Rumpel-Leede test strongly positive in all his cases. Of my cases there was no bruising on pinching in 24 and the capillary-resistance test was negative in 9. The 1 patient who bruised on pinching had a negative capillary-resistance test. Jürgens described the very early appearance "nearly always" of other bleeding tendencies, although his description of these is unconvincing, but in my patients such tendencies were infrequent. He claimed "far-reaching agreement" between the clinical picture of his cases and that of constitutional thrombopathy, and he classified both conditions among the hereditary thrombopathies (pseudohæmophilia), from all of which my cases differed profoundly. My patients showed purpura simplex, those of Jürgens did not. (Incidentally, while appreciating Dr. Levy's objection to the word pseudohæmophilia, I hope I am meantime entitled to use this well-established term.) I have recently seen more families of hereditary purpura simplex which further support my statements. The condition is common, I feel sure.

In conclusion, in my paper I mentioned the work of Dohrn quoted by Pratt. I have since traced Dohrn's paper (*Arch. Gynäk.* 1873, **6**, 486). He did not describe hereditary familial purpura simplex.

I am, Sir, yours faithfully,

St. Stephen's Hospital, S.W.10. ELI DAVIS.

## "GUILTY BUT INSANE"

SIR,—Under this heading on p. 1136 of your issue of Nov. 25 is a phrase to which I must take exception. "If a man is insane, he cannot form the conscious intention to commit murder; if he is guilty of murder, he cannot be insane." This is neither true nor is it the law of England. Were the view accepted that all insane persons were irresponsible for all their acts, it would deprive those persons of such rights and responsibilities as the law still affords them—e.g., power to make a will. The McNaghten criterion is of responsibility where insanity is alleged in defence of a criminal act, for the law does not hold that all insane persons are necessarily irresponsible. I agree that the verdict "guilty but insane" is ridiculous; but you are aware that it only came into being in 1883 because Queen Victoria could not be got to understand why Maclean should have been found "not guilty on the grounds of insanity" when indeed he had fired the pistol at her. Her Majesty had never grasped the meaning of the maxim *actus non facit reum nisi mens sit rea*, that an outward act alone cannot constitute a crime unless there is an accompanying criminal intention.

I am, Sir, yours faithfully,

T. M. DAVIE,

Medical Superintendent, East Riding Mental Hospital.

## EFFECTS OF DRUGS IN MYOTONIA

SIR,—In their paper in THE LANCET of Oct. 21 Dr. Guttman and Dr. Stokes mention a case to which they gave the diagnosis myotonia congenita. By their kindness I had examined this case and they stated: ". . . these features have been interpreted by Maas (1937) as evidence of dystrophia myotonica, but the interpretation must remain equivocal."

I examined this patient in 1936, 1937 and 1938 and observed slight wasting of temporal muscles and somewhat thin cheeks. The left sternomastoid was definitely wasted, supinator and triceps reflexes were not obtained, dorsiflexion of the feet was weak. Dr. L. D. Bailey kindly carried out an electrical examination, and mentioned in his report: "There is obvious wasting of the left sternomastoid and ? temporal muscles." The patient had no sisters and only one brother of 24 in 1936. The sides of the brother's forehead were bald, the left sternomastoid was not as well developed as the right one. The right abductor pollicis was probably slightly wasted, strength in cheeks was diminished.

His mother was a woman of 50. Her left temporal muscle was definitely wasted, and the right one was suspicious of wasting. The orbiculares oculi seemed to be somewhat weak and she was unable to blow out her cheeks. The sternomastoids as well as other neck muscles and all forearm muscles were poorly developed. There was slight but definite wasting in the lateral part of both thenar eminences, as confirmed by Dr. Bailey. Five of her brothers and sisters had died. One was abroad. Five of her brothers and sisters, living in this country, were examined and all showed symptoms suspicious of dystrophia myotonica.

I also examined the mother, 85 years of age. Her left thenar eminence was definitely wasted; the right one was somewhat flat.

From these examinations of the patient and his relatives I think the diagnosis of dystrophia myotonia is justifiable. In 1939, however, Dr. A. S. Paterson and I published a paper on the identity of myotonia congenita (Thomsen's disease), dystrophia myotonica (myotonia atrophica) and paramyotonia (*Brain*, 1939, **62**, 198). We maintained that a distinction between these three affections was not justified, and we suggested for all three the common name myotonia congenita or Thomsen's disease. In this sense I agree with the diagnosis myotonia congenita for the case in which Guttman and Stokes observed good results with quinine therapy.

I am, Sir, yours faithfully,

London, N.W.6. OTTO MAAS.

## JUNIOR CONSULTANTS IN THE E.M.S.

SIR,—I should like strongly to protest at the treatment the junior consultants have received at the hands of the Ministry of Health. I have not done so before because I had hopes that this would be corrected, but as the ministry has taken about three weeks to reply to my numerous letters I have only now learnt that any more considerate attitude on their part is a forlorn hope.

There are many others in the same boat and my own case is, I think, typical. I have the M.D., the M.R.C.P. and the D.P.M. (all of London), I have spent five or six years doing hospital work in psychiatry and during the last five years have practised it as a consultant. I am physician in charge of a department at one hospital of nearly 300 beds, assistant physician to another and chief assistant to a teaching hospital. Having written some fifteen papers and two books on my own subject and contributed to others I can claim to be a specialist in it. This would appear to be the opinion of the Ministry of Health, which sent me a form under the E.M.S. as a "Psychiatrist," but at a salary of £550 per annum. At that time, when everyone was expecting an air-raid on London at any moment, I abandoned my practice and went as soon as I was called, but I pointed out to the ministry that I had been appointed as a specialist—i.e., a psychiatrist—but was being offered only the remuneration of a general practitioner. When a consultant leaves his practice he cannot leave it in some colleague's hands but must abandon it to its fate, whereas the general practitioner goes on drawing something from his practice and does not need the extra remuneration, nor has he the terrific rents of the consultant. Since the outbreak of war I have been in constant communication with the ministry (or as constant as one can be with someone who answers a month after!) I have had no satisfaction except that "the Minister's advisers see no reason to alter my status." My sector chief, the adviser himself, and everyone except the ministry have stated that as a consultant I should have the rank and remuneration of a specialist, but nothing appears to move the ministry. In despair I tried the B.M.A., but although sympathetic the B.M.A. took nearly as long to answer my letters and was no more successful with the ministry than I was. It seems to me that the B.M.A. has, like Frankenstein, created a monster which will destroy it and unhappily also those who had hoped it would protect them.

Meanwhile, my rentals and insurance are more than I am earning under the E.M.S. and although the landlords are taking part payment on account I fear that some day I shall have to meet the appalling debt I am being forced to accumulate.

I am, Sir, yours faithfully,

Harley Street, W.1. A PSYCHIATRIST.

## DOSAGE IN RADON THERAPY

SIR,—There is an increasing use of radon in radium therapy owing to present conditions. The following data may be of use to those who have not hitherto been accustomed to adjust the length of exposure to the declining strength of a source. This can be done as shown in table 1, the assumption being that one starts with just as much radon (millicuries) as hitherto one used radium (milligrammes). The "time to half value" for radon is taken as 3·86 days.

TABLE 1

| Period of treatment with radium (days) | Period of treatment with radon (days) |
|---|---|
| 1 | 1·10 |
| 2 | 2·49 |
| 3 | 4·32 |
| 4 | 7·08 |
| 5 | 12·80 |
| 5·56 | Infinite (lifetime) |

For those who do not wish to prolong the period of treatment the alternative is to start with a larger number of millicuries of radon than one hitherto used milligrammes of radium. The data are given in table 2, the second column showing how the milligrammes must be multiplied in order to give the number of millicuries having the dosage equivalence for any specified period of exposure. With a source declining in strength, the average strength over any spell of time can be calculated. Some may find it a useful quantity. Values have been calculated and tabulated in the third column of table 2.

TABLE 2

| Period of treatment (days) | Mg. to be multiplied by | Average strength (percentage of original strength) |
|---|---|---|
| 1 | 1·09 | 91·5 |
| 2 | 1·19 | 84·0 |
| 3 | 1·30 | 77·4 |
| 4 | 1·40 | 71·3 |
| 5 | 1·52 | 66·0 |
| 6 | 1·64 | 61·1 |
| 7 | 1·76 | 57·0 |
| 8 | 1·89 | 53·0 |
| 9 | 2·02 | 49·5 |
| 10 | 2·16 | 46·3 |

The reference throughout has been to equivalence in physical doses; it is well known that the biological effect of a strong source acting for a short time is not necessarily the same as the effect of a weak one acting for a long time.

I am, Sir, yours faithfully,

Barnato Joel Laboratories, Middlesex Hospital, W.1. SIDNEY RUSS.

## A PLAN FOR BRITISH HOSPITALS

### LORD HORDER SUMS UP

SIR,—I accept your invitation to sum up this correspondence with some trepidation. It were less difficult to act the free lance and state my own views, but though these will inevitably become implicit, I will do my best not to obtrude them. Out of the welter of statements, suggestions, invective and revelation I will try to trace some consensus of opinion which may prove useful when, once again, we return to constructive, as against destructive, efforts.

War-mindedness stirs us to our depths and we take stock of ourselves both in the personal sphere and in the sphere of social, national and international service. Only in this sense does there seem to be any special reason at this time for intensive thinking upon this vital matter of hospitals or any call for fresh action at the moment. In one regard, indeed, as Sir Frederick Menzies reminds us, the time for considering this matter is inopportune, since a considerable part of the profession finds itself in a state of irritation, whether reasonably or not, arising out of the E.M.S. arrangements. There are no new factors and there are no new needs; they have all of them been before us for quite a long time; for years the demand for some rationalisation of existing hospital services had become insistent; careful assessment of the position and statesmanlike suggestions and plans for evolution (rather than revolution) were in the air; the Sankey commission's report is nearly three years old and the Dawson report was presented as long ago as May, 1920.

The one thing lacking has been the will to action, and if a state of war can make us dynamic in this field then we will welcome this good, like some others that may arise elsewhere, out of much evil. But it is surely better, as several of your correspondents suggest, that war should act as an accelerator to a plan considered during peace-time than as midwife (the metaphor is infectious!) to an emergency scheme conceived for purely opportune purposes. These correspondents dissent, and I think reasonably, from your special commissioner, when he bases his plan upon the eventuality of perpetually recurring war, with "intense aerial bombardment of our cities" making them untenable for hospitals and sick people. I was a little surprised that another criticism was not advanced against your S.C. in this connexion—that he assumes the emergency hospital scheme to have proved itself a success, whereas it has not yet been, and may never be, thoroughly tested. So that, in either case, your S.C.'s enthusiasm for the E.H.S. as a model for hospital planning seems premature. (If Dr. Trueta's experience in Spain and his general thesis in regard to the treatment of air-raid casualties are to be credited, the E.H.S. is not very likely to be a great success.)

But it is perhaps more pertinent to note—as one or two of your correspondents have done—that the purpose of the E.H.S. is quite different from the purpose of a peace-time H.S. The E.H.S. is designed to meet the sudden occurrence of an exceptional number of acute casualties, the great majority of which are inpatients, suffering from injury and shock. In times of peace the purpose of a H.S. is to cater for a steady flow of patients suffering from a great variety of illnesses, more subacute and chronic than acute, and more inpatient than outpatient. The number of investigations and ancillary (special) treatments required for the latter group is much greater than for the former and their nature is more variable. Altogether, therefore, the critics of your S.C. who express their lack of conviction as to the E.H.S. being a sound basis for peace-time hospital planning seem justified.

What is clearly of interest, however, is that we see in the E.H.S. what happens when other people take over, and determine, both ourselves and our work. The severer of your S.C.'s critics would say that something happens which, because of its very regimentation, is attractive to the younger and less knowledgeable amongst us, who call for its perpetuation because, like St. Peter, they feel that "it is good to be here." Whereas to most of your S.C.'s critics the scheme—to vary Sir Maurice Cassidy's metaphor—does but show the cloven hoof of a state medical service. The two students who write are enthusiastic, as also is "Houseman," although it by no means follows that the prophetic and optimistic assessment of the result of the plan made by the latter—that it "would provide interesting, effective, secure and adequately paid employment"—would be fulfilled.

Let me now attempt to analyse the correspondence in regard to the other issues raised by your S.C. I take first the "three aspects of the E.H.S. which" your S.C. thinks "call for unqualified praise." The first is *regionalisation*. From the complete absence of any adverse criticism I assume that your contributors accept the principle. Indeed, they could scarcely do otherwise, and it surely did not require the E.H.S. to bring the principle to our notice; this was assumed as long ago as 1919, when the then Minister of Health (Dr. Addison) asked his consultative council "to consider and make recommendations as to the scheme . . . of medical and allied services . . . *for the inhabitants of a given area.*" The policy determining the areas is a moot question. The British Hospitals Association has recently defined these areas in such a way as to make the best use of existing hospital (and teaching) facilities, arranging the services around a university or a large hospital with a medical school. In your editorial you appear to accept this method of defining the areas and thus counter the contention of Sir Frederick Menzies that they must be based upon well-defined local-government areas, for you say that these last-named areas have only history and sentiment to commend them.

The second "facet" is *decentralisation*, and this, your S.C. hopes, "has come to stay." Concerning it, however, great diversity of views is expressed. Dr. Izod Bennett, Dr. Walshe and others urge the importance of town facilities and amenities alike for patients and doctors, and both of the above-named correspondents point out that most patients recover from their illnesses as well in the city as in the country. Dr. Douthwaite dismisses decentralisation as waste of time and energy. Sir Alfred Webb-Johnson raises such pertinent inquiries as to how it would work if we had outpatients at the centre and beds at the periphery; whether special departments, X rays and pathology would not (with decentralisation) require duplication; and if it would not mean that for many of the students their day would be bisected; and he concludes with the parody: "where the population is there must the health services be also." Dr. Macgregor's reference to the desirability of building new hospitals neither within the city nor far from it, but just outside, is illustrated by recent decisions at Birmingham and Glasgow. (The coloured diagram in the Dawson scheme shows the "secondary health centre" situate just outside a large town.) Dr. Gainsborough speaks of "decentralised, regionally controlled hospitals" as though the two principles necessarily go together. But the criticisms against decentralisation are so strong that your S.C. (whose reply I have been

allowed to see) feels that this principle should not be linked too closely with regionalisation lest both be sabotaged.

"The third blessing which the E.H.S. has brought" is the practicability of transporting the sick from town to country. Your S.C. says this has been demonstrated; but, as I remarked earlier, the whole of the E.H.S. remains still to be tested. He protests (in his reply) against the gibes with which correspondents have received his green buses. True, some of these gibes seem unfair, and yet they were perhaps invited by his enthusiasm, which almost suggested that a ride in one of the buses had therapeutic value—another thing as yet not proven.

The fate of the voluntary hospitals arouses the usual pros and cons in regard to these old-established and (as many think) efficient institutions. Your S.C.'s plan disposed of them and their property in good buccaneer fashion, but this "moribund" form of hospital service (Dr. Gainsborough) receives a great deal of praise and from all quarters. Two or three writers make the curious comment that because their financial soundness turns more and more upon some form of contributory scheme they are therefore not voluntary. I recommend these correspondents to pay a visit to Merseyside and see the pride and enthusiasm taken by the people there in financing and controlling their large group of hospitals. Many of us have come to regard the principle of contributory schemes as the soundest means of financing hospital services and think it should be more universally adopted. As to its success, Wolverhampton doubled its income in the first five years from starting such a scheme and Leatherhead has actually rebuilt a part of its hospital out of funds saved from this source. In his reply your S.C. says that contributory schemes convert the voluntary hospital into a huge health insurance company. But why not?

What we miss from the discussion is any attempt to deal with the pressing problem of achieving effective collaboration between the voluntary hospitals and the municipal hospitals so as to eliminate the wastage that arises from continuing the two services on lines that tend to become more and more parallel. The questions of administration and control of the (postulated) regionalised hospital groups receive interesting answers. It is noteworthy that even your S.C. shrinks from handing over the central control to the Ministry, as do others. An ad-hoc body seems to be the general choice, with regional committees under it.

There remains the vexed question of the whole- or the part-time man, but it is clear that the majority favour the whole- *and* the part-time man. Dr. Izod Bennett probably provides the key to the matter in his use of the word "individuality." The suggestion that the whole-time man serves God and the part-time man serves Mammon is not less offensive than that the whole-time man is devoid of energy and personality. Both suggestions are untrue. I see that your S.C., in his rejoinder, admits the cogency of his critics' views and suggests that we should try both the whole- and the part-timer, forgetting that we have done this, and successfully, for a good many years—and are, therefore, likely to continue to do so.

The consultant comes in for even more ignominy than the part-timer—which, indeed, until he retires from the active staff of his hospital, he usually is. Your S.C. admits that he overstated the case against the need for the consultant. That is good. His picture of this moribund and bankrupt member of the profession was bound to rouse denials of its verisimilitude, just as that other picture of your S.C. as Sir Galahad, starting out to rescue him from penury before it is too late, reduces Dr. Walshe to rollicking merriment. And the question could scarcely fail to arise why, if the consultant is so effete, so corrupt and so unnecessary, it is desirable to try to resuscitate him.

I find it difficult to part with the subject without introducing a wider reference than the one which, in the main, the discussion followed.

(i) In your leading article you referred to the fact that "Hospitals exist for the benefit of the public—the personal convenience of the staff is of less consequence." All the same, there is here more talk about the security of the doctor than there is about the claims of the patient. Need the doctor trouble so much about security? Thoreau said that if a man made a better mouse-trap than his neighbour all the world would make a path to his door. This experience together with the all-powerful instinct of self-preservation will ensure the survival of the good doctor, whether he be a general practitioner, a researcher, a teacher or a consultant.

(ii) The successful planning of any hospital scheme must, as Sir Frederick Menzies and Dr. MacWilliam insist, be made in relation to the health services as a whole, of which, as the latter remarks, the hospital should be the dynamic centre. If it is not so planned it is doomed to failure. I think it is a pity that so many of your correspondents deal only with the more provocative and disruptive parts of your S.C.'s inquiry and stop short of those constructive suggestions of which they are surely capable.

It has been said that we have in this country the best health services in the world. I do not think that this is an overstatement. The trouble is that we have to qualify it by introducing the word "potential," since the machinery is not fully utilised by the people for whom it was created. To plan a really sound hospital scheme would go far towards "letting in the clutch" between the power unit (the doctor) and the car (the patient). This correspondence will have done much good by ventilating vexed questions and keeping alive in our minds the urgent need for action so soon as the dogs of war are leashed once again. And leashed, sooner or later, they will be. Then, "so what"? Surely some of us will tackle this hospital problem as our contribution to whatever peace-aims fall within our power to achieve. The hospital cannot be divorced from the health services. Regional coördination is conceded. Collaboration between voluntary and municipal hospitals is urgent and should yield to tact, good-will and exigency. The needs of the public must determine the nature and number of the personnel. The training of doctors and nurses is a paramount part of the health services and must be recognised by the State. These are the principles which must be kept in mind.

And finally, Sir, I hope you will not think me merely curious if I suggest that the publication of the identity of your special commissioner will help us to discount any nuance of special pleading in the valuable and courageous contribution which he has made towards this consummation.

I am, Sir, yours faithfully,

Jan. 18. HORDER.

*** The article in THE LANCET of Oct. 28 was written "without prejudice" by a member of the editorial staff, Dr. Stephen Taylor, before he was commissioned in the Royal Naval Volunteer Reserve. —ED. L.

## THE E.M.S. AND PARLIAMENT

SIR,—In his letter in your last issue, Sir Ernest Graham-Little makes certain statements which should not be allowed to go forward unchallenged. He is evidently under a misapprehension as to the functions and composition of the Central Emergency Committee. I should like, therefore, to remind him of the following facts.

1. The Central Emergency Committee was set up for the express purpose of supplying medical personnel to the fighting services and to the Ministry of Health. The committee had no authority to advise on policy or strategy although many of its members have repeatedly deplored the imposition of any such limitation of activity.

2. There are not less than 16 consultants on the Central Emergency Committee who represent on a *functional* basis the whole sphere of consulting practice.

3. The Central Emergency Committee is not responsible for the profound dislocation of hospital life in London and the unsatisfactory conditions of the E.M.S. which resulted from that dislocation. The strategic plan adopted by the Ministry of Health was drawn up in advance of the emergency by the London sector officers.

I am, Sir, yours faithfully,

Manchester. HARRY PLATT.

## A TREATMENT OF RHEUMATISM

SIR,—Before I was called up for service in the R.A.M.C. I was getting some interesting results in the treatment of rheumatism, and I am writing this letter before they are completed because there seems no possibility of my continuing with this treatment for a considerable time. I came to the conclusion that there was a possibility that the septic focus that has so often been sought for might be situated in the skin. I thought that the multiple foci in the deep parts of the sweat glands would account for the popular beliefs concerning rheumatism, such as the effect of cold and wet, and also for the incomplete results in the physical treatment.

To reach this part a fat-soluble antiseptic that could be rubbed in was needed. This seemed so simple that I thought my theory must be wrong, but when I looked for one I found that there were very few, simply weak ones such as the salicylates. Then a new antiseptic, Azochloramid, was brought to my notice. This can be obtained in a solution of triacetin which makes a solution in olive oil. I have been rubbing this solution into the skin in cases of superficial rheumatism and even in the cases of arthritis. The results have been most encouraging, even curative.

I would be grateful if other general practitioners would give this so simple a treatment a trial, and let me know their results.

I am, Sir, yours faithfully,

Petworth, Sussex. W. A. BALL.

## SODIUM DIPHENYL HYDANTOINATE

IN a letter in our issue of Dec. 9, Messrs. Glaxo Laboratories Ltd. pointed out that Epanutin is not the only preparation of sodium diphenyl hydantoinate on the market, and that a G.L. preparation was now available under the name Solantoin. Messrs. Parke, Davis & Co. now remind us that the original work on anticonvulsants by Drs. Putnam and Merritt was carried out in the United States with a drug supplied by P., D. & Co. which is now known there as

*Continued at foot of next column*

## TREATMENT OF NEUROSES IN AIR-RAIDS

THE incidence of psychiatric or neurotic casualties likely to result from air-raids is a question on which there is considerable divergence of opinion. Some say that such casualties will occur in large numbers, but those with practical experience of air-raids suggest that this view is mistaken. Professor Mira, for example, who was in Madrid and Barcelona during the Spanish war, states definitely that the incidence of neuroses was comparatively small, so small that there was not sufficient employment for the psychiatrists in Spain, some of them having to be transferred to general medical work. Any scheme for dealing with psychiatric or neurotic casualties must therefore be on a basis which will admit of indefinite expansion should circumstances require it, although it is far from certain that these circumstances will arise. The scheme elaborated by the Ministry of Health has been constructed with this in mind.

### LONDON AREA

The special arrangements for dealing with neurotic casualties are of course closely linked with the main Emergency Hospital Scheme in the area. Each sector contains a large number of hospitals which are so organised that casualties arriving at first-aid posts or casualty hospitals within the sector, and which cannot be dealt with other than temporarily at this level, will be evacuated to hospitals further afield in the same sector. This procedure, while admirably adapted to the rapid and appropriate disposal of organic injuries, requires considerable modification in its application to neurotic cases. First, in many of the cases success is dependent upon early treatment being obtainable near the site of onset. Secondly, if cases of simple fright and mild neuroses are immediately evacuated to hospitals further down the line the accommodation required for organic cases under the conditions of a severe air-raid might be unduly strained. Thirdly, owing to the psychological factors underlying neurotic disorder this procedure might lead to a great increase in the incidence of such disorder. Fourthly, it is undesirable that neurotic cases should be treated in the same wards and under the same conditions as organic cases, as this again may tend to accentuate and prolong neurotic illness. Lastly, more severe neurotic cases require special methods and expert care, which may not be available in general hospitals. It is therefore essential to secure that simple neurotic cases are dealt with adequately in the "front-line"—i.e., at first-aid posts and casualty hospitals—from which the large majority may be returned to their own homes after any necessary preliminary treatment; next, that only those cases which in the opinion of an expert require more prolonged treatment are sent down the line, facilities being provided for the careful sorting out of such cases; and, finally, that cases so sent down go to special hospitals, where the staff and methods suitable for these cases are available.

In order to secure these ends the following machinery has been established. Each sector has been

*Continued from previous column*

"Dilantin" and in this country as "Epanutin." Furthermore, as mentioned in the *Journal of the American Medical Association* (Sept. 17, 1938), the study was aided by a grant from that company, and almost all the subsequent independent clinical trials in Europe and in America were conducted with their product.

divided into four or five areas, and a neurologist or psychiatrist (including in the latter term "medical psychologist") has been attached to the hospitals of each area. The duties of this officer are (*a*) to make himself acquainted with the topography of his district; (*b*) to get in touch with the various hospitals comprised in that district, and to ensure the smooth working of the neuroses scheme; (*c*) to establish, with the aid of the group officer, outpatient departments in one or more of these hospitals, where neurotic conditions can be treated, and to which general practitioners may send cases for which specialist aid is required; and (*d*) to decide which cases need the more prolonged and specialised treatment to be obtained in the special neurological hospitals. In general, cases can be sent to these special hospitals only on the advice of the neurologist or psychiatrist. In the event of a local air-raid any further specialist staff required will be drafted in from other districts.

Instructions have also been issued to the medical personnel of first-aid posts, a part of which was reprinted in the recent report of the conference convened by the Ministry of Pensions (see THE LANCET, Dec. 16, p. 1278). These instructions emphasise that in cases of simple fright, and in the majority of mild neuroses, all that is required is sympathetic but firm handling, opportunity for temporary rest, with or without sedative drugs, and then the return of the patients to their own homes. Such patients may be advised, if necessary, to report to their general practitioners or to attend the special outpatient departments established in their district. More severe cases will be referred by the officer in charge of the aid-post to a casualty hospital.

Four special neurological hospitals have been organised at various places around London, but all situated at least 10 miles from the central area. These hospitals, staffed entirely by neurologists and psychiatrists, are designed for the treatment of those patients whose condition is too severe to enable them to be sent to their own homes, or to be dealt with adequately as outpatients. The neurological hospitals also provide mobile units which can be sent to neighbouring areas to supplement, in the case of a local air-raid, the neurologists and psychiatrists attached to those areas. Two of the special neurological hospitals (at Mill Hill and Sutton) have been organised by the Maudsley Hospital, which has in effect been divided into these two units. The remaining neurological hospitals are situated at Isleworth and at Maidstone, and a fifth hospital is projected in Essex. A special hospital has also been established near Watford to deal with cases requiring more prolonged psychological treatment. If more accommodation is required, it is proposed to provide neurological units in association with the base hospitals more remote from London.

### THE PROVINCES

Arrangements similar to those of London have been made in each of the provincial areas, though of course modified in accordance with their needs. In particular, the aim of providing special neurological hospitals in which the patients will be under expert care has been followed throughout. About twenty such units have been established in the provinces, each of which can receive patients from neighbouring towns or from a more extensive district. A pool of neurologists and psychiatrists who are under contract for service has been prepared from which specialists can be dispatched immediately after an air-raid if their services are required to supplement those locally in charge of arrangements.

# OBITUARY

## THOMAS FRANCIS TODD

M.S. LOND., F.R.C.S., M.R.C.O.G.
MAJOR, R.A.M.C.

Frank Todd, the gynæcologist, was killed in France on Dec. 1 when the car in which he was a passenger collided with a lorry. At the outbreak of war he had volunteered for service in the R.A.M.C., and, having refused opportunities of working at home, was attached to No. 6 General Hospital in France at the time of his death. This accident brought to an end a career which promised to be outstanding, for he had the keenness, the untiring energy and the inquiring mind that bring great results in research. Although he was only 31, he had already established himself as an authority on carcinoma of the cervix.

*Oscar Way, Colchester.*

Born in 1908, Todd was educated at Prior Park College, Bath, and Guy's Hospital. At Guy's he got his London M.B. in 1931 and while still house-surgeon passed his final F.R.C.S. at the age of 24. In the next two years he became a M.R.C.O.G. and master of surgery. After this brilliant start, he had six months' experience as ship's surgeon and in general practice, and then returned to Guy's as registrar and demonstrator of anatomy. Next he spent a year as R.S.O. at Preston Royal Infirmary. In 1934 his connexion with the Christie Hospital, Manchester, began with his appointment as assistant registrar at the Holt Radium Institute, where he gained a sound groundwork experience of radium therapy in general. The most fruitful phase of his attachment to the Christie Hospital was as research fellow. His researches there must rank in importance with those of David Goodfellow into the effects of radiation on the blood. He made a series of investigations into the natural evolution of carcinoma of the cervix and the action of radiation in the disease. He first studied the nature and ætiology of the pain, and showed that it was of two distinct types—visceral and somatic—and that a distinction between the types could be made in every case. He then developed effective methods of treatment for each type, visceral pain being relieved by presacral neurectomy and somatic by intrathecal alcohol injection. His later results are set out in a paper in this issue. From this he turned to the complications of treatment of carcinoma of the cervix and of spreading malignant disease on the rectum, bladder, the ureters and kidneys. He clarified the difficult subject of rectal necrosis following radium treatment of cervical cancer, and described his studies in this field in a Hunterian oration (the second he had given) to the Royal College of Surgeons this year. Before the war he had made a list of subjects needing looking into which would have kept him busy for years. His method of approach to these problems was a painstaking investigation of large numbers of individual

patients. He had an amazing memory for detail and a natural and well-cultivated ability to abstract general principles from a mass of observations. He had travelled widely, visiting the gynæcological clinics in Dublin, Paris, Lyons, Vienna and the United States, and was becoming a familiar figure at Heyman's clinic in Stockholm. He was on the medical staff of the Hope Hospital, Salford, where he founded a weekly discussion clinic in gynæcology, the Crumpshall Hospital, Manchester, Salford Royal Hospital, Leigh Infirmary and St. Mary's Hospital, Manchester, besides carrying on a busy consulting practice. His powers as an operator and diagnostician were not yet fully developed, but he was an indefatigable worker in the outpatient department, where he insisted on every case, however uninteresting, being fully investigated.

Few can have gained such complete joy from their work. With his abounding vitality he took all life had to give but used it sparingly. To watch him smoke his daily cigar after a small well-chosen dinner, writes a colleague, made one realise that here was a wise exponent of the art of living. In spite of his success, he was a man of true humility who realised how much there is to learn. He welcomed criticism, but was a pretty fighter in defence of what he believed to be true. His was a gallant, keen and thoughtfully open mind, eager to learn and to serve, and eminently capable of carrying to full fruition the work he had begun so well.

## FREDERICK H. J. WESTON

M.B. LOND., M.R.C.S.

PROBATIONARY SURGEON-LIEUTENANT, R.N.V.R.

AMONG those reported missing from H.M.S. *Rawalpindi* was Surgeon-Lieutenant F. H. J. Weston, the fifth son of Mr. and Mrs. W. J. Weston of South Norwood. He was educated at Merchant Taylors' School, Crosby, Liverpool, and Whitgift School, Croydon. From there he went to Guy's Hospital, where he qualified in 1934. He was house-physician to Professor Ryle at Guy's and subsequently held house-appointments at Croydon General Hospital, St. George's-in-the-East (L.C.C.), and the Hertford British Hospital in Paris. He was ship's surgeon in the P. & O. s.s. *Rawalpindi* on her last voyage before the war. He was then mobilised in the R.N.V.R., and was again serving in the *Rawalpindi*, now H.M.S. and an armed cruiser, when she was sunk after being in action with the German pocket battleship *Deutschland* off the coast of Iceland. He was married on Sept. 21 of this year.

Prof. J. A. Ryle writes: "I had the great privilege of working with Weston during three stages of his career. He was with me first of all as a student at Guy's, later as house-physician, and shortly after my arrival in Cambridge he came to Addenbrooke's Hospital as house-surgeon. His was a sterling character. He was very keen on his work and always trying to advance and improve his knowledge and to increase his academic attainments. Although he already held the London M.B. degree, he seriously considered staying on at Cambridge to take the Cambridge degree as well. I remember discussing this matter with him and advising him eventually against expending further time on preliminary subjects when he was already so advanced and well-equipped in clinical experience. He is, I believe, the first Guy's man of his generation to lose his life on active service in the present war. I know that the sorrow of all Guy's men who knew him will have been mingled with pride when they heard that he had shared the fate of the gallant crew of the *Rawalpindi*."

## TREATMENT OF WOUNDS IN THE 'SEVENTIES

Dr. J. THORESBY JONES writes: It was in the '70s that Lister's methods first came into my work. For dressings we were supplied with gauze, boiled and soaked in carbolic acid, and the same material was used for swabs and for bandages. The carbolic was supplied in Winchester quarts in a standard strength of 1 part to 20 parts of distilled water, but for common use we had 1 in 40, 1 in 60 and 1 in 100. Before attending to wounds we dressers would change our outdoor coats for dirty jackets which were kept hanging up in the students' room, and which were worn for weeks or months without being washed. A friend of mine, a well-known throat specialist in after years, had his apron made of red material so as to avoid shocking patients with the sight of blood-stains. When operating he had a habit of wiping his fingers on the front of this apron. As it was red to start with he was able to go on wearing it for weeks.

The wounded part would be bathed with gauze soaked in 1 in 60 carbolic, and the bruised tissue cut away with scissors and forceps which had been in soda solution—a bit of washing soda dissolved in a pint of water. We were almost entirely ignorant of sterilisation. We knew that bacteria were freely spoken of as being present in pus, and we therefore washed away as much pus as possible. After thorough cleansing, a piece of "protective"—transparent paper something like modern Cellophane—was applied next to the wound, and over that a pad of carbolised gauze kept in place with a bandage of the same material.

Ulcers were common in those days and would be brought to the hospital carefully wrapped in coarse linseed poultices made on tow. The poultice would be removed and the wound dressed as described above. I may say that when the patient came back in a day or two the ulcer was in a very different condition from what it had been with the poultice, but did healing proceed at all under these conditions? The fact of it having been cleansed must have helped, but it took a long time to heal. I know now that the reason for the length of time was the constant movement of the patient. If we had tried immobilisation I think we should have had much quicker results.

I did not see more than two or three appendix cases before the end of the '80s, but was present at the first to be operated on at U.C.H. It was not known to be an appendix but was looked upon as an acute typhlitis and treated by linseed poultice. A young surgeon, Marcus Beck, told us that he suspected an inflamed appendix which would have to be removed. He had read about it, but at that time there was reluctance to open the abdomen. Beck worked without any fuss. The anæsthetic (always chloroform) was given and his two dressers were with him. I was there because I always managed to get my nose in somewhere if there was anything worth seeing. When an operation was being performed carbolised sprays were used. I have often spent a Wednesday afternoon in the theatre in the condensed spray of four steam-spraying machines working simultaneously with the consequence that one's shoes were saturated with the condensed carbolic on the floor. This had serious results in the case of one or two of my colleagues, for it set up irritation of the kidneys. After the operation the wound was dressed with wet carbolised gauze for three days. Then, all appearing well, a dry dressing was applied and the result was good.

# PARLIAMENTARY INTELLIGENCE

## FROM THE PRESS GALLERY

### Milk and Nutrition Policy

IN the House of Commons on Dec. 14 Mr. W. S. MORRISON, Chancellor of the Duchy of Lancaster, said it would be necessary for the Government to assume responsibility for milk policy as a whole during the war as regards production, price and distribution. It would be agreed, however, that it must be subject during the war to general direction. The war had led to many new problems in milk policy. The milk-in-schools scheme had been gravely dislocated because of the removal of schools which were the normal channels of distribution. He was anxious that this and similar beneficent schemes should be stimulated during the war to the utmost possible extent. The immediate problem was that of price. There had been no rise so far in the price of liquid milk for ordinary consumption, but the Milk Board had now informed the Government that they were proposing to negotiate with the Central Committee for a rise of 4*d*. per gallon, and the Government had decided that some increase in the producers' returns was justified. In order to permit a full examination of the position, the Ministry of Food would make a temporary grant to the Milk Marketing Board sufficient to raise producers' returns by 3*d*. per gallon in January and February, and 2½*d*. per gallon in March, above those realised in the corresponding months of 1939, provided that the existing retail prices were maintained.

Dr. HADEN GUEST said he was glad to hear the Minister announce a milk policy which apparently did not raise the price to the consumer, but the minister's statement did not go far enough from the standpoint of the importance of nutrition. Nutrition policy ought to be considered as carefully as was policy for the fighting forces. There ought to be a carefully thought out programme of milk production covering the next three years. Medical authorities laid down that the average consumption of milk for all adults should be half a pint a day, but milk, while desirable for adults, was the keystone in the nutritional structure with regard to infants. It was essential, too, for expectant and nursing mothers. Upon our milk policy would depend our reserve of child life. In 1935 an expert committee appointed by the League of Nations produced a report on the physiological bases of nutrition, in which they expressed the opinion that the amount of milk which should be consumed by children and by nursing and expectant mothers was not half a pint, but two and a quarter pints a day. Our milk consumption was very low in comparison with that in Scandinavia and the United States, and he hoped the Government would not remain content with the policy which they had today announced, but would go forward to a bolder and more far-reaching policy.

Dr. EDITH SUMMERSKILL said that she had every sympathy with the farmers, the producers and the distributors, but if the policy expounded that afternoon was followed, even though the price of milk was not to be raised, the Government was not encouraging the consumer to buy more milk. People were to be asked to limit their consumption of bacon, butter, sugar and meat, and surely a constructive Government should give them an important substitute at a reduced price. In a recent article Professor Mottram had said that if the health of the people was to be maintained in war the consumption of milk should be increased. In 1918, when rationing had been introduced, the resistance of the people had fallen to a very low level, and we had one of the worst influenza epidemics the world had ever known. From time to time one heard about the marriage of health to agriculture. That ceremony was long overdue.

#### PASTEURISATION

Dr. SUMMERSKILL asked whether the Government had taken any steps to maintain the quality of the milk supplied. Forty per cent. of our cows suffered from tuberculosis. She wondered if the House realised how serious the position was today. In the big towns the big combines sold pasteurised milk, not because they were cranks, but because they knew that to test all milk by a tuberculin test was expensive and the only way to supply safe milk was to pasteurise it. During the last three months the town children had been suddenly dispersed into the country districts where there were no pasteurisation plants. These evacuated children had been sent to areas which were supposed to be safe from bombs, but which were in fact vulnerable to tuberculosis. According to the statistics of the Ministry of Health, 2000 children died last year from surgical tuberculosis which was in great part due to milk-borne infection. It was absolutely immoral that there should be traffic in this infected milk.

Sir JOSEPH LAMB said that Dr. Summerskill's figures would frighten the public into believing that the bulk of the milk produced was not as good as it ought to be. That was not true. The bulk of the milk produced in large quantities in this country was of very high quality. It was only where small quantities were produced under unsatisfactory conditions that they got a large percentage of unsatisfactory analytical results.

Lord APSLEY said he thought that the question of the pasteurisation of milk had been "debunked" long ago. Doctors did not always agree, and it was quite easy to get one learned set of medical authorities to say one thing and another set to say something entirely different.

Dr. HADEN GUEST: Not about milk.

Dr. SUMMERSKILL: They are unanimous.

Lord APSLEY said that he had never known doctors unanimous about anything. A learned professor in Edinburgh had told him that they had conducted a series of experiments on children in Scotland with pasteurised and unpasteurised milk and had found that the pasteurised milk was so lacking in nourishment that the children became more liable to disease for that reason alone. The professor also told him that if pasteurised milk was poured into a cup and a fly just put a foot into it it would react to a severe tubercular test. It could not be kept clean from infection. Only fresh good grade A milk was of benefit to children.—Dr. HADEN GUEST drew the noble lord's attention to the report published by the Milk Marketing Board, dealing with an experiment on over 6000 children, which showed that the nutritional difference between pasteurised and unpasteurised milk was insignificant.—Lord APSLEY said that he preferred the opinion of his medical professor.

### National Expenditure

In the House of Commons on Dec. 12 a Select Committee was appointed to examine the current expenditure on the services directly connected with the war, and "to report what, if any, economies consistent with the execution of the policy decided by the Government may be effected therein."

### Adjournment for Christmas

Parliament adjourned on Dec. 14 for the Christmas recess. Both Houses will reassemble on Jan. 16.

## QUESTION TIME

### Emergency Beds in Hospitals

Mr. PRITT asked the Minister of Health whether he was aware that the number of emergency beds provided by the London County Council and other municipal authorities under the emergency hospital scheme was much in excess of those provided by the voluntary hospitals, but

that the former were not provided with anything like the same proportion of extra doctors and surgeons; and whether he would state the proportions of extra doctors and surgeons engaged under this scheme in voluntary and municipal hospitals, respectively, relative to the number of emergency beds provided.—Mr. ELLIOT replied: The number of beds available in municipal institutions is naturally larger than in voluntary hospitals. It is the case that the proportion of medical staff enrolled in the E.M.S. to casualty beds is higher in the case of the voluntary hospitals than in that of the municipal hospitals, but in the latter hospitals the medical staff available for casualties includes also a number of doctors in the employment of the local authority but not enrolled in the E.M.S. In any case, I do not consider that any useful conclusion could be drawn from a comparison between the respective proportions of beds to medical staff in the two types of hospital. The medical staffing of a hospital included in the E.M.S. is governed by medical needs, and depends on a number of factors such as the probable use and the arrangements with affiliated hospitals.

### Available Surgical Skill

Sir ERNEST GRAHAM-LITTLE asked the Minister whether in view of the necessity of maintaining the most experienced available surgical skill in London, where the first and most critical effect of any air attack must be expected, he would revise the arrangements by which nearly all the most experienced surgeons were awaiting the expected casualties in centres remote from London.—Mr. ELLIOT replied: The present arrangements, which were made in general agreement with the profession, provide for the bulk of the surgical treatment required by London air-raid casualties being given by the more experienced surgeons at hospitals on the periphery of, but not necessarily remote from London, and for the rapid transfer of the patients to these hospitals. These arrangements are designed not only to secure the most efficient treatment of the patients but also to avoid undue risk to highly skilled and irreplaceable personnel, and I think it undesirable to revise them further for the present.

Replying to a further question about experience of air casualties in Spain, and the primary importance of immediate surgical attention of the highest quality, Mr. ELLIOT remarked that any who have had experience know that a hospital in the centre of a bombarded town is not always the most auspicious place to which to bring casualties.

### The New E.M.S. Offer

Sir E. GRAHAM-LITTLE asked whether the Minister could now state the number of members of the honorary staffs of the voluntary hospitals who had accepted the new conditions outlined in his answer of Nov. 23 and the number who had actually returned to take up their duties as regards conduct of out-patient and other specialist departments and systematic education of medical students in the voluntary hospitals; and whether the offer of transfer to this new scheme from any form of agreement previously accepted in individual cases covered those members of hospital staffs who were receiving the second grade of salaries for whole-time service.—Mr. ELLIOT replied: To date 337 specialists and consultants have accepted the offer referred to. I cannot say how many of these have returned to their normal duties. It was not suggested by the professional committee consulted that the offer of transfer should extend to members of the E.M.S. receiving the second grade of salaries for whole-time service.

Sir E. GRAHAM-LITTLE: May I remind the Minister that in his answer on Nov. 23 he, as I thought, undertook to facilitate the transfer to the new scheme that he was offering of all voluntary staffs who had accepted full-time engagements, irrespective of any agreements which they had previously accepted; and will he not regard this category of honorary officers as being covered by his undertaking?—Mr. ELLIOT: I will again examine the answer I gave. I do not evade carrying out any undertaking that I have given.

### Domiciliary Treatment of Injured Civilians

Mr. DENVILLE asked the Minister if he would give details of the temporary domiciliary medical service for civilians, other than insured persons, who sustained war injuries when hospital treatment was not necessary or was impracticable; whether the scheme was to apply to the whole of Great Britain; and how the scheme was to be administered.—Mr. ELLIOT replied: Details of the service referred to will appear in a forthcoming memorandum. The scheme will apply to the whole of Great Britain, although there may be differences of detail in Scotland. It will be administered by my department in England and Wales and by the Department of Health in Scotland.

### Medical Fees for Unaccompanied Children

Mr. GROVES asked the Minister whether he would reconsider the arrangements relating to medical services whereby the remuneration of medical practitioners was dependent upon a local emergency medical committee disbursing Government funds on such basis, whether capitation or attendance, as might be found convenient to the committee; and whether his department, as responsible for the provision of the medical services, would deal with the expenditure and have it properly certified by the Exchequer and Audit Department.—Mr. ELLIOT replied: I see no reason for varying the arrangements made for the medical treatment of unaccompanied children evacuated under the Government scheme. The total amount payable for this service is determined by my department on the basis of the number of unaccompanied billeted school-children as indicated in returns received from local authorities, and the payment by the department is subject to audit. The distribution of the amount for each area amongst the doctors is dealt with by the local emergency medical committees, who will be required to send in periodical accounts which will be available for inspection.

### Consultants for Nervous Disorders

Sir FRANCIS FREMANTLE asked the Secretary of State for War how far the recommendations of the War Office Committee of 1922, based on the experience of the last war, regarding the prevention and treatment of nervous disorders had been adopted by the Army medical service for our forces in the field.—Sir V. WARRENDER (financial secretary for the War Office) replied: Officers of the Royal Army Medical Corps have for some years received and given instruction based on the recommendations of the committee referred to. Two eminent consultants in psychological medicine have been appointed to the Army, one at home and one in the field, and have given advice as to the lines of treatment which they consider should be adopted in cases of nervous disorders in the field.

### Milk-in-Schools Scheme

Dr. HADEN GUEST asked the Parliamentary Secretary to the Board of Education the number of education authorities who made use of the milk-in-schools scheme; what was the number of other authorities who supplied milk at reduced rates in connexion with centres for maternity and child welfare; and what was the total quantity of milk so supplied for both purposes for the latest convenient period.—Mr. KENNETH LINDSAY replied: Before the war the milk-in-schools scheme was in operation in some or all of the schools in the areas of 312 of the 315 local education authorities in England and Wales. In some areas where the schools have been closed since the outbreak of war the operation of the scheme has been temporarily suspended, but in all these cases the local education authorities are being urged to introduce emergency arrangements as soon as possible. The second part of the hon. member's question should be addressed to my right hon. friend the Minister of Health. The approximate quantity of milk supplied under the milk-in-schools scheme in October last was 1,500,000 gallons.

### Tuberculosis in Monmouthshire

Mr. JENKINS asked the Minister of Health whether his attention had been called to the statement of the medical officer of health for the county of Monmouthshire to the effect that persons suffering from tuberculosis were dying because of the failure of the Welsh National Memorial Association to provide the requisite hospital accommodation; and what steps he was taking to investigate the

position.—Mr. ELLIOT replied: The answer to the first part of the question is in the negative. I am informed, however, that the list of tuberculous patients for Monmouthshire, including Newport, who are awaiting admission to residential institutions includes a large proportion of cases of the advanced hospital type. It is hoped to devote a proportion of the beds in the new hutted hospitals to reducing the waiting lists in the coming year.

### Blood Transfusion in the Army

Sir FRANK SANDERSON asked the Secretary of State for War if he could give any information regarding arrangements for blood transfusion in the Army.—Sir V. WARRENDER (financial secretary to the War Office) replied: Overseas, an organisation on the most modern lines has been provided that will ensure that supplies are available in forward areas for any soldier who requires blood transfusion. In this country, an Army Blood Supply Depôt has been formed which sends the blood required overseas and also serves the home hospitals. Civilian blood donors have patriotically volunteered to provide a source of supply. This Army service has the additional responsibility of providing supplies for the Royal Air Force.

### Nutritive Quality of Bread

Sir JOSEPH LEECH asked the Minister of Health whether he would require that bread supplied in institutions controlled by public authorities should be made of flour containing the wheat germ with the B series of vitamins, so that growing children in particular might not suffer from malnutrition owing to being given bread deprived of its full food value; and would he confer with the service authorities with a view to providing the forces of the Crown with bread containing the wheat germ.—Mr. ELLIOT replied: I have not the power to give any such general direction. As to the second part of the question, the armed forces are under the medical charge of highly skilled personnel who have devoted much attention to questions of dietetics, and I do not think I could usefully adopt the suggestion.

### Nurses' Salaries

Mr. HARVEY asked the Minister whether his attention had been called to the serious reduction in the salaries paid to trained nurses by a number of local authorities since the outbreak of the war; and whether he was taking any action to preserve the standards of the nursing profession.—Mr. ELLIOT replied: I have received representations to the effect referred to, though I am not satisfied that the facts are as stated. I am making further inquiries into the matter but it is not one in which I have any power to give directions to local authorities.

### Corporal Punishment for Boy of 15

Mr. POOLE asked the Home Secretary if he would exercise his discretion in the case of a fifteen-year-old boy, found guilty of arson at the recent Birmingham assizes; and, in view of the police evidence as to his low physical and mental health due to the extreme poverty of his upbringing, cause the remission of that part of the sentence which related to the twelve strokes of the birch.—Sir JOHN ANDERSON replied: I understand that when informing the court of the boy's character and antecedents, the police quoted a report of the headmaster of his school which included a statement to the effect that his impression was that the boy lacked vitality, physically and mentally, because of the poverty of his home, but the headmaster, in the same report, also expressed the opinion that he was a normally healthy boy. Under the arrangements made for carrying out the sentence of the court, a medical officer will be present and will satisfy himself, before the sentence is carried out, that there is no medical reason against the infliction of the punishment ordered by the court. I have been unable to find grounds which would justify my recommending any interference with the sentence which the court thought it necessary to impose.

### Marriage Statistics

Sir ARNOLD WILSON asked the Minister of Health to state the number of marriages during the last September quarter, as compared with the figures for the corresponding quarter of each of the preceding three years.—Mr. ELLIOT replied: The figures are as follows:

*Marriages in England and Wales*

| September quarter— | |
|---|---|
| 1936 | 115,445 |
| 1937 | 121,421 |
| 1938 | 116,316 |
| 1939 | 152,358 |

### A Letter to the *Times*

Sir E. GRAHAM-LITTLE asked the Minister of Health whether the communication by Sir Charles Wilson in a London daily paper, dated from the Ministry of Health and of a propagandist nature, regarding the staffing and use of the London hospitals, was made with his approval; and, if not, whether he will take steps to see that no unofficial communications emanate from his department.—Mr. ELLIOT replied: The answer to the first part of the question is in the negative. I think that the principle indicated in the second part of the question, which applies of course to both permanent and temporary officers of departments, is generally well understood by those concerned. The dating of the letter in question from the Ministry of Health was, I am assured, quite accidental.

# MEDICAL NEWS

### University of Cambridge

Sir Augustus Daniel, M.B., formerly director of the National Gallery, has been appointed Rede lecturer for 1940.

Mr. Malcolm Donaldson and Mr. William Gilliatt have been appointed additional examiners in midwifery in Part I of the final M.B. examination to be held this month.

### University of Bristol

J. S. W. Little's dissertation has been approved for the degree of M.D.

### University of Aberdeen

On Dec. 13 the following degrees and diplomas were conferred:

*M.D.*—Esther Hendry (awarded commendation for thesis).

*M.B., Ch.B.*—I. A. Angus, A. G. Beattie, J. H. Begg, G.R. Bernard, R. S. Dewar, W. F. Dickie-Clark, F. A. Forbes, Elijah Fowler, J. C. Fraser, James Gauld, C. W. Hossack A. L. Hughes, G. E. Johnstone, M. J. Mackenzie, J. G. Moir, Elizabeth J. B. Orr, R. W. Panton, C. W. Petrie, W. F. Russell, J. H. Scott, A. C. B. Singleton, Kenneth Smith, G. P. Wallace, A. M. Watson, W. G. R. Wilson, and C. C. Wright.

*D.P.H.*—R. M. Gordon and John Warrack.

### University of Edinburgh

On Dec. 15, the following degrees and diploma were conferred:

*M.D.*—†W. L. Brown, †W. N. Campbell, A. H. Crichton, **J. N. Davidson, *L. V. Knutson, †*R. A. H. Krynauw, †A. U. MacKinnon, †J. H. D. Millar, P. T. Northover, †*Beatrice A. S. Russell, ***A. C. White, †*J. F. Wilson.

*Ph.D.*—†S. C. Das, †J. C. Thompson.

*M.B., Ch.B.*—J. R. Allan, J. L. Anderson, Robert Barrie, N. C. Baskett, Elizabeth G. Batters, F. W. Belford, I. R. Bindman, G. M. F. Bisset, John Breckenridge, L. S. Bruce, Benjamin Carr, David Crichton, B. G. Daly, S. W. Davidson, A. R. Duff, R. M. Ellison, P. M. Fea, W. M. Ferguson, J. S. Fraser, W. A. Glen, W. M. Grant, J. H. Higgins, A. R. Hodgson, Mohammed Homayun, E. L. O. Hood, William Huey, W. W. Hutton, Helena Lauder-Thomson, N. G. Lindsay, R. N. Littlewood, C. T. MacDonald, H. J. M'Pherson, F. K. Matheson, W. C. Menzies, W. B. Nelson, John Robertson, A. F. Rutherford, J. L. Shanks, J. L. Sinnette, G. H. Stuart, W. B. Thorburn, †Thelma G. Townson, K. R. H. Wardrop, and J. L. Washington.

*D.P.H.*—I. A. G. MacQueen.

*** Awarded gold medal for thesis.
** Highly commended for thesis.
* Commended for thesis.
† In absentia.

THE fifth International Congress of Pædiatrics which was to have been held in Boston, Massachusetts, next September, has been postponed.

## Royal College of Surgeons of England

At an ordinary meeting of the council held on Dec. 14 with Mr. Hugh Lett, the president, in the chair, the offer of Mr. Herbert Olivier to present to the college a replica of his portrait of Mr. Wilfred Trotter was accepted.

It was reported that the special trustees of the Prophit trust had renewed the cancer research studentships of Dr. L. H. Gray and Dr. C. A. P. Wood for the year 1940.

Diplomas of fellowship were granted to the following:

N. A. Miller, L.R.C.P.; Roy Parkinson, M.B. Lond.; M. P. Morel, M.B. Camb.; P. W. Houghton, M.B. Lond.; H. H. Fouracre Barns, M.B. Lond.; C. G. Rob, M.B. Camb.; J. C. Coates, M.B. Leeds; J. L. D. Roberts, M.B. Lond.; J. S. Horn, M.B. Lond.; R. L. Lamming, M.B. Leeds; C. J. Longland, M.B. Lond.; A. J. Heriot, M.B. Lond.; S. H. Raza, M.B. Lond.; Alice J. M. T. Barnes, B.M. Oxfd; W. P. Greening, L.R.C.P.; C. P. Sames, M.B. Lond.; D. M. Thomson, M.D. Manc.; P. A. Menon, M.B. Madras, L.R.C.P.; S. S. Anand, M.B. Punjab; J. R. Barbour, M.B. Adelaide; A. C. Belfield, M.B. N.Z.; J. O. Corbin, M.B. Adelaide; Kalipada Das, M.B. Calcutta; D. M. Douglas, M.B. St. And.; K. T. Goldswain, M.B. Cape Town; B. C. Hardy, M.D. Toronto; J. W. Horsley, M.B. N.Z.; C. J. D. Langton, M.B. Sydney; J. F. Lipscomb, M.B. Sydney; Riyaz-I-Qadeer, M.B. Punjab; and T. F. Rose, M.B. Sydney.

A diploma of membership was granted to H. V. Reeves of St. Thomas's Hospital, and licences in dental surgery were granted to the following:

K. W. Adam, Mahmud Ahmad, Robert Allen, C. P. Aps, J. L. Badget, G. H. Bailey, A. W. A. Baker, Ludwig Bencze, A. G. Beynon, Alfred Braun, Alan Brown, Fred Butterfield, J. S. Calnan, R. J. H. Corfe, W. G. Cross, D. M. Cushing, E. G. Dadak, A. S. Davie, Fritz Engel, I. O. Enos, R. A. F. Evans, H. H. Fielder, D. P. Finnegan, Joseph Fleischmann, Phillip Fletcher, F. C. Francis, S. A. Freeman, P. W. Gant, J. B. Gayes, W. F. Gibb, Karl Giesskann, D. F. Glass, C. H. Griffiths, D. C. Hall, H. A. Hall, J. G. Hancock, J. W. S. Harvey, W. J. Head, G. J. M. Holland, I. H. F. Holmes, Sidney Holt, C. F. Hudson, R. G. James, D. P. Jones, R. C. Jones, P. D'O. Kolesar, Heinrich Krott, Jacques Kurer, J. W. Lee, C. R. Levy, F. T. J. Limpenny, Robert Loff, K. B. Lole, H. M. Lopez, S. G. McCallin, Edith Mahler, A. F. Mathias, E. J. Martin, A. S. Mondschein, L. G. Morey, W. G. Morgan, Wilhelm Mosinger, Gaston Nadin, J. B. Nixon, Walter Nuki, Hans Orlal, John Parakal, H. I. L. Phillips, Marjorie L. C. Phillips, Otto Pick, R. D. Plowman, Leander Pohl, A. M. Pollard, Cecil Pollock, L. P. Potter, C. J. F. Pulley, Karl Richter, J. C. Ritchie, S. H. Roache, G. B. Roberts, P. D. M. Rowland, J. H. Sarginson, Hans Schachter, G. P. Scott, Kathleen S. Silas, A. R. D. Smith, E. S. Smith, W. T. Smith, K. L. Spring, F. N. Stares, Arthur Stone, S. L. Strachan, J. E. Taylour, Walter Thaler, J. H. Thomson, A. H. G. Trevanion, E. A. St. H. Tweney, A. T. Vale, Alan Walton, M. C. Whiting, R. I. H. Whitlock, P. O. Wilson, Keith Wood, H. A. Woodward and J. H. Young.

Diplomas in anæsthetics were granted, jointly with the Royal College of Physicians, to the following:

R. D. N. Bisset, F. K. Boston, Dorothy M. Braddock, I. G. Braddon, Elizabeth M. Corbin, T. F. Crowley Charlotte S. Dafoe, E. W. Dunkley, G. H. Ellis, F. G. Ethiraj, Margaret Forbes, G. P. Fox, Hunter Gillies, Philip Glaze, C. A. Hayes, A. L. St. A. McClosky, W. M. Maidlow, Beryl M. Mason, B. M. Phillips, T. B. Pitts, N. F. Sahor, R. N. Sinclair and B. N. Sircar.

## Medical Regulations Abroad

The Iranian parliament has passed an act to regulate the employment of doctors in the state service. The act divides doctors into three classes and fixes the conditions of nomination, promotion, retirement, emoluments and hours of work for each class.

On Sept. 9 a ministerial decree came into force in Jugoslavia which makes it compulsory for all doctors to serve a probationary period of two years in country districts or rural towns of not more than 4000 inhabitants.

## British Empire Cancer Campaign

The 16th annual report presented last week at the general meeting contains an account in 350 pages of research work of many kinds done under the ægis of the campaign. Lord Hailsham, who presided, read a message from the Duke of Gloucester recalling that the Cancer Act 1939 made no provision for research, which was left to voluntary effort. Lord Horder, in proposing the adoption of the report, said that the general move when war broke out to close down all such voluntary effort was followed by wiser second thoughts to continue research in matters affecting the health of the community despite the strain of war. Actually grants totalling £35,000 have been made for work in the coming year. On pp. 9–27 of the report Mr. J. P. Lockhart-Mummery makes a convenient summary of the work done in 1939.

## Medical Registration Council

At the half-yearly meeting of the branch council for Ireland, the reports of Sir W. I. de Courcy Wheeler, who had inspected the final examinations in surgery held recently in University College, Dublin, University College, Cork and in the Apothecaries' Hall were discussed. These reports completed the inspection of final examinations made at the request of the council. Prof. R. W. Johnstone has reported on midwifery and gynæcology and Sir Humphry Rolleston on medicine.

## Voluntary Hospitals Broadcast

The first national wireless appeal on behalf of all voluntary hospitals throughout the land will be made on Christmas Eve. This combined hospitals appeal will take the place of separate appeals on behalf of individual hospitals, and the detailed arrangements are being made by a special committee representing the British Hospitals Association and King Edward's Hospital Fund for London.

## International Society of Medical Hydrology

At a meeting of the general purposes committee of this society held on Nov. 17, Dr. J. Barnes Burt was elected chairman of council in succession to the late Dr. E. P. Poulton until such time as the whole council could meet. The committee was strengthened by the appointment of four additional vice-chairmen, all in countries neutral in the present conflict. The London office has been closed and the society's address will be, until further notice, that of the hon. treasurer, Dr. G. D. Kersley, 6, The Circus, Bath.

## Basis of Homœopathy

At the meeting of the British Homœopathic Society held at the London Homœopathic Hospital on Dec. 6, Dr. W. Lees Templeton, the president, delivered an address on homœopathic experimentation. He described the treatment of twenty patients with pulsatilla. The cases included anxiety states, arthritis, pneumococcal septicæmia, gout, chorea, chronic eczema, and pneumonia, but each had symptoms sufficiently well defined and peculiar to warrant the use of the same drug on the principle of similitude. He said that this record epitomised the basic principle on which homœopathy was founded, that the prescription should be made on the symptoms present and not only on the diagnosis. Individualisation was essential in any adequate homœopathic prescription, and that meant consideration of a patient's reaction to environment, to heat and cold, to fatigue, to movement, to weather changes, to emotional shock, to grief, to disappointment, to unemployment, and a hundred and one such events. He drew attention to a recent dictum that "few people are neurotic in face of inevitable death but many become so from disappointments in their careers or unhappy marriages." He suggested that modern medical thought was at last making a true assessment of homœopathy, which for a hundred years had endeavoured to elicit just such symptoms and causes in the production of nervous disease.

## Valedictory Address at Aberdeen

At a graduation at Aberdeen University, Principal Fyfe told young doctors of the need for a spirit of inquiry at the bedside as in the laboratory. Successful doctors, he said, do not necessarily make much money but they bring to each patient human sympathy and their powers of dealing with a problem scientifically. Unless we succumb to the narcotic of empirical practice each patient is a problem. Principal Fyfe was glad that the term "preventive" is now little used in medicine, for the new object is increasingly the promotion and construction of health. In this field there is scope for enterprise and service, and he believed that after the war development would be even faster than in the last 20 years. He thought those graduates who joined the services fortunate, since their skill will be available for all who need it without distinction of person, uniform or nationality. They may also learn much about the practice of their craft and about human nature. He looked forward more, however, to the days of peace when it will again be possible for doctors to cultivate those moral, intellectual and spiritual qualities so necessary for genuine success in their profession.

# NOTES, COMMENTS AND ABSTRACTS

## ANDREW BOORDE

Scholar, monk, recusant, physician, man of the world and author, Andrew Boorde is one of the names familiar to every student of the history of medicine in England. Not that he stepped outside his own age, nor yet that he shone even in his own time with any special radiance, but because, where time has swept so much to oblivion, his strong common sense and his faculty for communicating his severely practical wisdom in brief and sententious language has preserved his works, or at least a part of them, for the delectation of our inquisitive age. It cannot be said that we know much of him. Dr. K. F. Russell tells us (*Aust. N.Z. J. Surg.* October, 1939) the few uncertain dates, the few uncertain facts, and of his curious and mysterious journeyings abroad. Was he perhaps a secret diplomatic agent of Cromwell's continental intrigues? There is some evidence that he was. But it is better to take Andrew as he reveals himself in his writing and to savour his sound and quaintly expressed wisdom on life and the pursuit of health without too strict an inquiry into the manners or the morals of the author. Of one thing we can be sure: like most men of the Tudor time he lived a busy and adventurous life and thoroughly enjoyed every day of it.

## STANDARDISATION OF STRETCHERS

THE desirability of standardisation of stretchers, stretcher-gear and ambulance equipment generally has been apparent for many years. It impedes the smooth and efficient working of hospital services if the hospital trolleys will not take some of the stretchers on which patients are conveyed in ambulances to hospital or if stretchers will not go into an ambulance sent to remove patients to hospital. Further, the difficulties of handling stretchers in lifts, on stairways and in corridors, particularly in modern flats, are generally recognised and call for remedy.

In response to a request from the British Medical Association, which was endorsed by the Ministry of Health, the British Standards Institution has prepared a specification relating to the dimensions of stretchers, stretcher-carriers in ambulances and hospital-trolleys. The draft specification has been circulated to give those interested an opportunity to submit comments.

## LOCAL ANÆSTHESIA OF THE THYROID

TO reduce the amount of endocrine secretion of the thyroid, R. Gosio (*Policlinico*, sez. prat., Dec. 4, 1939, p. 2102) practises what he calls "intraparenchymal anæsthetisation" of the gland, although he admits that the term is somewhat loose, because his object is not to abolish sensation but to put the excitatory nerves temporarily out of action by the injection of procaine and the like. Now, the nerve-supply of the thyroid is said to be rich and varied, being derived from the carotid plexus, pharyngeal plexus, superior cardiac nerves, middle and inferior nerves of the inferior cervical ganglion, subclavian plexus, glossopharyngeal nerves, cardiac branches of the vagus, and hypoglossal nerves. Presumably some of these are inhibitory and others excitatory. Theoretically, one would have to "anæsthetise" the excitatory nerves to obtain a reduction in endocrine secretion, and the inhibitory nerves to obtain an increase; but Gosio says that in practice this selection, which would be well-nigh impossible, is not necessary, "anæsthetisation" of the thyroid always inhibiting secretion. This treatment, originally introduced to cope with thyroid emergencies, such as coma, was extended to deal with hyperthyroidism in general and other diseases in which the thyroid is implicated, such as essential hypertension and angina pectoris, in which Gosio claims to have achieved good results.

## HYPERTENSIN

IN a letter to *Nature* (Dec. 9, 1939, p. 144) Muñoz, Braun-Menéndez, Fasciolo and Leloir, of the instituts of physiology at Buenos Aires, describe a substance which they believe to be the cause of renal hypertension: hypertensin. They recall that Goldblatt obtained a rise of blood-pressure by compression of the renal artery and Houssay by injecting the venous blood of the kidneys. From such venous blood they obtained a pressor substance with definite chemical characteristics. The same substance could be obtained by incubating blood-serum or its pseudo-globulin fraction for 15 minutes at 37° C. with the kidney protein renin. It is different from adrenalin, tyramin, pitressin or urohypertensin, and Muñoz and his colleagues think that it is liberated by the proteolytic enzyme renin from the pseudo-globulin fraction of the blood-serum.

## THE ALIEN DOCTOR IN FRANCE

A PERUSAL of the French medical press since the outbreak of the war leaves no doubt as to the intensity of the feelings of mobilised French doctors towards the many aliens who, having acquired the right to practise in France but not being naturalised, are free to absorb the practices of their French colleagues called up for military service. In *Concours Médical* for Nov. 12 Dr. G. Lavallée addresses an open letter to these alien doctors. He suggests that they can find expression for their gratitude to the French hospitality they have enjoyed by serving in the army. He adds that, if this advice is neglected, he sees no reason why the first French doctor to return home should not settle accounts by a well-planted kick "au derrière."

## NEW PREPARATIONS

PHYTOFEROL is a standardised solution of vitamin E made available for medicinal use in capsules by British Drug Houses Ltd. (London, N.1), each capsule containing the equivalent of 3 mg. of synthetic *dl*-α-tocopherol. Originally prescribed for the treatment of sterility, vitamin E has proved more valuable for the prevention of abortion. Administration during pregnancy may mitigate or even eliminate minor symptoms of toxæmia.

VI-SIBLIN (Parke, Davis and Co., London, W.1) is a palatable granular preparation, having as its base the highly water-absorbent material from a species of plantago into which is incorporated a definite amount of crystalline vitamin $B_1$. The preparation is designed to overcome constipation due to the consumption of foods so refined as to be deficient in this vitamin or due to the preference for diets which leave insufficient residue to excite adequate peristalsis. The species of plantago from which Vi-Siblin is prepared has the power of absorbing more than thirty times its volume of water, and the gelatinous mass thus formed is non-irritating and unaffected by the digestive ferments. The addition of vitamin $B_1$ is designed to increase the tonus of the intestinal musculature.

ALBUCID (Schering Ltd., 185 High Holborn, London, W.C.1) is an acetyl derivative of sulphanilamide in which the acetyl radical replaces one of the two hydrogen atoms in the sulphamido group. Its chemical formula is *p*-aminobenzenesulphonacetamide and it has been well tolerated, when given by the mouth, both in acute and chronic cases of gonorrhœa. It is presented in the form of tablets.

SULPHONAMIDE-P Ointment (A. & H.) contains a 5 per cent. solution of *p*-aminobenzenesulphonamide incorporated in a readily absorbable base from which it will not crystallise. It is intended for the treatment of superficial streptococcal infections, including wounds, ulcers, whitlows and impetigo. The ointment is put up in collapsible tubes by Allen and Hanburys Ltd. (London, E.2).

MALTED MILK TABLETS. Allenburys Malted Milk (Allen and Hanburys Ltd., London, E.2) is now available in tablet form. The tablets are not intended to replace the preparation in its original form for ordinary domestic use but to render it accessible during travel or an emergency.

DIMOL ANTISEPTIC SOLUTION is ready for immediate use at first-aid and ambulance posts for stopping bleeding and sterilising wounds. Dimethylomethoxyphenol (dimol) is a synthetic benzene derivative in which the phenol group is linked to the chemical ring and from which phenol is not liberated. It is free from causticity and may be applied to the most delicate skin. It is claimed that the solution applied to a wound in the appropriate manner will stop bleeding immediately without any smarting. The makers are Dimol Laboratories Ltd. (London, E.C.4).

A booklet dealing with the clinical application of ŒSTROFORM and PROGESTIN B.D.H. in relation to menstruation and pregnancy has been issued by British Drug Houses Ltd. (London, N.1). It contains a helpful summary in diagrammatic form of the method of application of the natural œstrogenic hormone, Œstroform, and of the natural corpus-luteum hormone, Progestin, and the various indications for their use.

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The PERIHEL-MIXRAY SUN LAMP (Atlas Exporters and Importers Ltd., 24, Holborn, London, E.C.1) is claimed to produce the same health-giving rays as the sun. There is (1) a generator producing a wide range of ultraviolet rays; the bulb is made of special glass through which rays down to 2250 A can penetrate freely; (2) an infrared element giving non-glowing rays of wave-lengths above 8000 A. Separate switches are provided so that the infrared unit may be used alone for rheumatic conditions. The appliance is made in two models, one for the table and the other for the floor.

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". . . 9 January 1915. 'French and German soldiers who had fraternised between the trenches at Christmas subsequently refused to fire on one another and had to be removed and replaced by other men.' Amid the vast stream of war news which nowadays flows all over our newspapers I chanced to find that little paragraph in a corner of an evening journal. It seems to me the most important item of news I have read since the war began."—HAVELOCK ELLIS in Selected Essays, Everyman edition, 1936.

## The Lancet 100 Years Ago

*Dec.* 21, 1839, *p.* 488.

*From the correspondence column.*

A correspondent informs us that the *Bristol Mercury*, of December 7th, contains a report of an inquest, held at the Infirmary in Bristol, on the body of a girl who had died on the next day after taking an "overdose" of prussic acid, on which occasion the verdict returned was "Died of disease of the chest." We shall feel obliged to any friend who will forward to us a copy of the newspaper, with or without additional information on the facts of the case; or information on the subject without the paper, if the latter be not procurable.

*A Pupil of King's College.*—No redress can be obtained. The money has been pocketed, and certainly would not be refunded.

We cannot find room for the rejoinder of *Mr. Hytche.*

We cannot see the point of the letter signed an "*Unexperienced Practitioner.*"

The communication of *Dr. Favell* has been in type for the last three weeks, but we have been compelled to postpone its publication from want of room.

*Mr. Abraham Banks* has forgotten to attach his address to his polite communication.

## Appointments

BRADSHAW, D. B., M.B. Dubl., D.P.H., assistant school medical officer for Huddersfield.

BOWER, IRENE M., M.B. Manc., resident house-surgeon at the Royal Manchester Children's Hospital, Pendlebury.

FRANKLIN-ADAMS, Joan, M.B. Lond., assistant school medical officer for Huddersfield.

HEAP, M. J. MCKENZIE, M.R.C.S., resident medical officer at the Royal Manchester Children's Hospital, Pendlebury.

STRANGE, F. G. St. CLAIR, F.R.C.S., resident surgical officer at the General Hospital, Newcastle-on-Tyne.

SUTHERLAND, MARGARET E., M.B. Lond., assistant medical officer for maternity and child-welfare work for Nottingham.

Examining Surgeons under the Factories Act, 1937: Dr. J. E. R. PALMER (Mevagissey district, Cornwall); and Dr. EDWARD JOHNSON (Cranborne district, Dorset).

## Vacancies

*Birmingham, Romsley Hill Sanatorium.*—Res. asst. M.O., at rate of £240.

*Bury County Borough.*—Asst. M.O.H., at rate of £550.

*Cambridge, Addenbrone Hosp.*—H.S., also H.S. to Special Depts., each at rate of £130.

*Chelsea Hosp. for Women, Dovehouse Street, S.W.*3.—Surgeon. Also two H.S.'s, each £130.

*Elizabeth Garrett Anderson Hosp., Euston Road, N.W.*1.—Two H.P.'s, res. anæsthetist, sen. H.S., and three H.S.'s, each £100 (minimum).

*Lincoln City.*—Asst. M.O.H., £500.

*Liverpool, County Mental Hosp., Rainhill.*—Deputy med. supt., £800.

*London Chest Hosp., Victoria Park E.*2.—H.P. at rate of £100.

*London County Council.*—Asst. M.O. for mental health services, £470.

*Manchester, County Mental Hosp., Prestwich.*—Med. supt., £950.

*Manchester, Victoria Memorial Jewish Hosp., Cheetham.*—Res. surg. O., £200.

*Mansfield and District General Hosp.*—H.S., at rate of £150.

*South Shields County Borough.*—Asst. M.O., £500.

*St. Mary's Hosp., W.*2.—Sen. and jun. asst. radiologists, £125 and £75 respectively.

*Truro, Royal Cornwall Infirmary.*—Hon. ear, nose, and throat surgeon.

*Wakefield City.*—Jun. asst. M.O., £500.

The Chief Inspector of Factories announces vacancies for examining surgeons at Wollaston, Northampton; Yarmouth (I. of W.), Southampton; and Balfron, Stirling.

## Births, Marriages and Deaths

### BIRTHS

MACDONALD.—On Dec. 13, at Birmingham, the wife of Lieutenant W. T. Macdonald, R.A.M.C.—a daughter.

NASH.—On Dec. 10, at Cranwell, the wife of Squadron-Leader D. F. Ellison Nash, F.R.C.S., R.A.F.V.R.—a son.

PRESTON.—On Dec. 15, at Eastbourne, to Margaret, wife of Lieut.-Colonel T. W. Preston, M.D., R.A.M.C.—a son.

RICHARDSON.—On Dec. 17, at Southampton, the wife of Mr. L. A. Richardson, F.R.C.S.—a son.

### MARRIAGES

BISHOP—SMITH.—On Dec. 12, at Shifnal, Salop, John Colin Bishop, M.B., R.A.M.C., to Eveline Anne Smith, of Ealing.

THOMSON—MILLER.—On Dec. 14, at Ballycastle, co. Antrim, Edmund John Thomson, M.C., M.B., to Janet Grace Miller.

WILLOX—BROCK.—On Dec. 15, in Glasgow, Leonard Stephen Willox, M.D., of London, to Nannie Brock, of Dumbarton.

### DEATHS

BUTCHER.—On Dec. 12, at Worthing, William James Butcher, M.R.C.S., D.P.H., aged 61.

CAIRNS.—On Dec. 16, at Lahore, India, James Cairns, C.I.E., O.B.E., M.B. Glasg., chief medical and health officer, North-Western Railway, India.

DAVIES.—On Dec. 11, at Aberayron, Cardiganshire, David Morgan Davies, M.D. Lond., aged 59.

MCGOWAN.—On Dec. 16, in Belfast, William McGowan, M.D., R.U.I., in his 98th year, sometime medical officer of Maghera, co. Derry.

TAIT.—On Dec. 14, in London, Edward Sabine Tait, M.D. Lond., aged 83.

TAIT.—On Dec. 13, at Alverstoke, Hants, Deputy Surgeon General William Tait, M.B. Edin., R.N. retd., aged 84.

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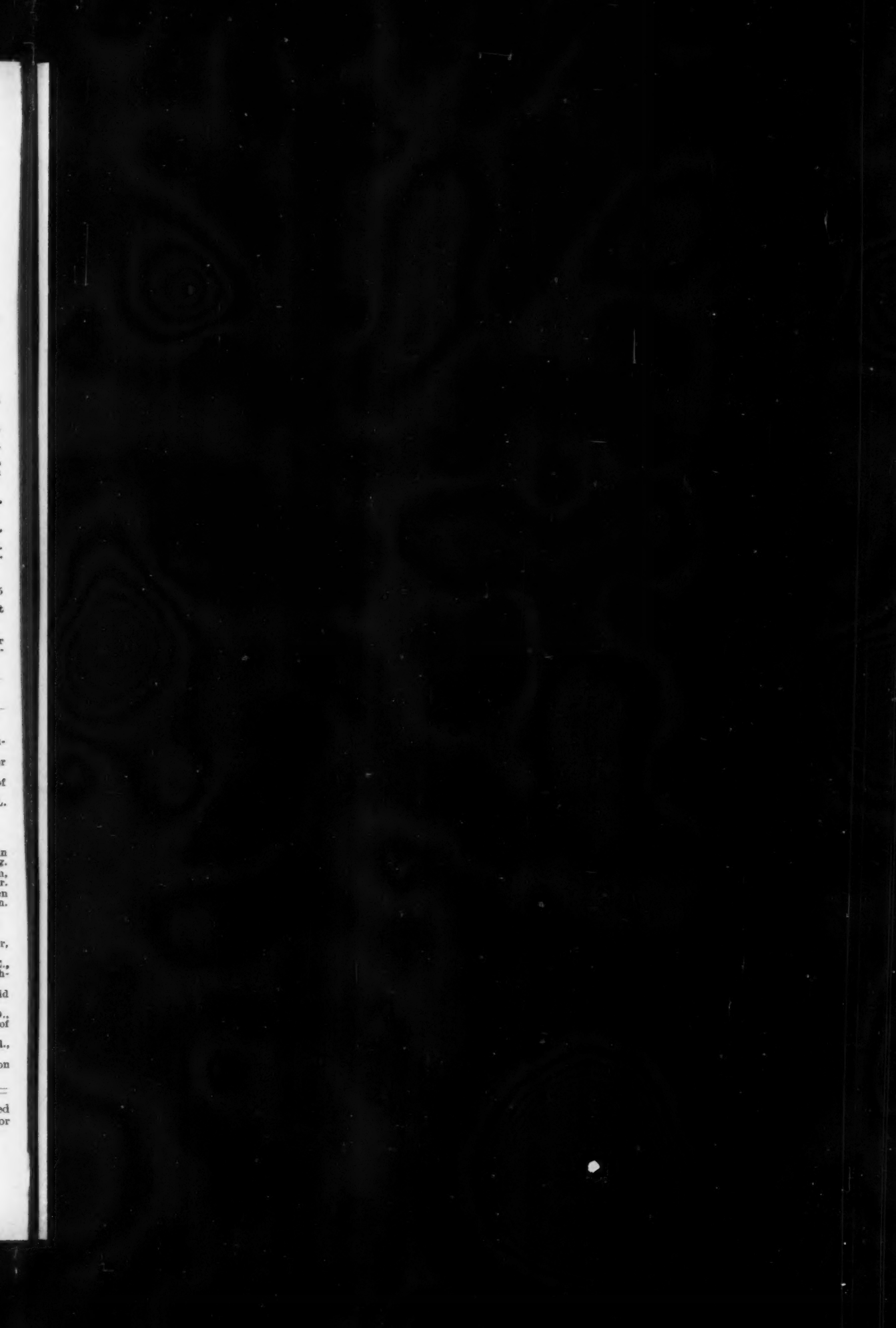
Mr. Ingleby Oddie, the Westminster coroner, has retired on reaching the age-limit of 70. He has been a coroner for 27½ years and has held 20,000 inquests.